Technical Publication

Venue 50

Basic Service Manual
Direction Number: 5447566-100 English

Rev. 7

All Material Copyright © 2013-2015 by General Electric Company Inc.
All Rights Reserved.

Product Information

This Manual covers the software version of R4.x.x for Venue 50 ultrasound system.

GE
P.O. Box 414, Milwaukee, Wisconsin 53201 *U.S.A.*
(Asia, Pacific, Latin America, North America)

GE Ultraschall Deutschland GmbH & Co. KG
Beethovenstrasse 239
Postfach 11 05 60
D-42655 Solingen *GERMANY*
TEL: 49 212.28.02.208; FAX: 49 212.28.02.431

Revision history

Revision History

Revision	Date (YYYY/MM/DD)	Reason for change
Rev. 1	2013/02/25	Initial Release.
Rev. 2	2013/10/09	Add FRU replacement procedures and update repair parts list.
Rev. 3	2013/11/26	Update FRU replacement procedures and repair parts list.
Rev. 4	2014/04/11	Update remote service function.
Rev. 5	2014/05/28	Update the spare part list.
Rev. 6	2014/07/04	Add Power Module Information.
Rev. 7	2015/05/13	Update the spare part list.

List of Effected Pages (LOEP)

Pages	Revision	Pages	Revision
Front	Rev. 7	Chapter 6	Rev. 7
Front matter	Rev. 7	Chapter 7	Rev. 7
TOC	Rev. 7	Chapter 8	Rev. 7
Chapter 1	Rev. 7	Chapter 9	Rev. 7
Chapter 2	Rev. 7	Chapter 10	Rev. 7
Chapter 3	Rev. 7	Index	Rev. 7
Chapter 4	Rev. 7	Rear Cover	Rev. 7
Chapter 5	Rev. 7		

Please verify that you are using the latest revision of this document. Information pertaining to this document is maintained on MyWorkshop/ePDM (GE electronic Product Data Management). If you need to know the latest revision, contact your distributor, local GE Sales Representative or in the USA call the GE Ultrasound Clinical Answer Center at 1 800 682 5327 or 1 262 524 5698.

Important Precautions

Translation policy

WARNING
(EN)

THIS SERVICE MANUAL IS AVAILABLE IN ENGLISH ONLY.

- **IF A CUSTOMER'S SERVICE PROVIDER REQUIRES A LANGUAGE OTHER THAN ENGLISH, IT IS THE CUSTOMER'S RESPONSIBILITY TO PROVIDE TRANSLATION SERVICES.**
- **DO NOT ATTEMPT TO SERVICE THE EQUIPMENT UNLESS THIS SERVICE MANUAL HAS BEEN CONSULTED AND IS UNDERSTOOD.**
- **FAILURE TO HEED THIS WARNING MAY RESULT IN INJURY TO THE SERVICE PROVIDER, OPERATOR OR PATIENT FROM ELECTRIC SHOCK, MECHANICAL OR OTHER HAZARDS.**

AVERTISSEMENT
(FR)

CE MANUEL DE MAINTENANCE N'EST DISPONIBLE QU'EN ANGLAIS.

- **SI LE TECHNICIEN DU CLIENT A BESOIN DE CE MANUEL DANS UNE AUTRE LANGUE QUE L'ANGLAIS, C'EST AU CLIENT QU'IL INCOMBE DE LE FAIRE TRADUIRE.**
- **NE PAS TENTER D'INTERVENTION SUR LES ÉQUIPEMENTS TANT QUE LE MANUEL SERVICE N'A PAS ÉTÉ CONSULTÉ ET COMPRIS.**
- **LE NON-RESPECT DE CET AVERTISSEMENT PEUT ENTRAÎNER CHEZ LE TECHNICIEN, L'OPÉRATEUR OU LE PATIENT DES BLESSURES DUES À DES DANGERS ÉLECTRIQUES, MÉCANIQUES OU AUTRES.**

WARNUNG
(DE)

DIESES KUNDENDIENST-HANDBUCH EXISTIERT NUR IN ENGLISCHER SPRACHE.

- **FALLS EIN FREMDER KUNDENDIENST EINE ANDERE SPRACHE BENÖTIGT, IST ES AUFGABE DES KUNDEN FÜR EINE ENTSPRECHENDE ÜBERSETZUNG ZU SORGEN.**
- **VERSUCHEN SIE NICHT, DAS GERÄT ZU REPARIEREN, BEVOR DIESES KUNDENDIENST-HANDBUCH NICHT ZU RATE GEZOGEN UND VERSTANDEN WURDE.**
- **WIRD DIESE WARNUNG NICHT BEACHTET, SO KANN ES ZU VERLETZUNGEN DES KUNDENDIENSTTECHNIKERS, DES BEDIENERS ODER DES PATIENTEN DURCH ELEKTRISCHE SCHLÄGE, MECHANISCHE ODER SONSTIGE GEFAHREN KOMMEN.**

AVISO
(ES)

ESTE MANUAL DE SERVICIO SÓLO EXISTE EN INGLÉS.

- **SI ALGÚN PROVEEDOR DE SERVICIOS AJENO A GEHC SOLICITA UN IDIOMA QUE NO SEA EL INGLÉS, ES RESPONSABILIDAD DEL CLIENTE OFRECER UN SERVICIO DE TRADUCCIÓN.**
- **NO SE DEBERÁ DAR SERVICIO TÉCNICO AL EQUIPO, SIN HABER CONSULTADO Y COMPRENDIDO ESTE MANUAL DE SERVICIO.**
- **LA NO OBSERVANCIA DEL PRESENTE AVISO PUEDE DAR LUGAR A QUE EL PROVEEDOR DE SERVICIOS, EL OPERADOR O EL PACIENTE SUFRAN LESIONES PROVOCADAS POR CAUSAS ELÉCTRICAS, MECÁNICAS O DE OTRA NATURALEZA.**

ATENÇÃO
(PT-Br)

ESTE MANUAL DE ASSISTÊNCIA TÉCNICA SÓ SE ENCONTRA DISPONÍVEL EM INGLÊS.

- **SE QUALQUER OUTRO SERVIÇO DE ASSISTÊNCIA TÉCNICA, QUE NÃO A GEHC, SOLICITAR ESTES MANUAIS NOUTRO IDIOMA, É DA RESPONSABILIDADE DO CLIENTE FORNECER OS SERVIÇOS DE TRADUÇÃO.**
- **NÃO TENTE REPARAR O EQUIPAMENTO SEM TER CONSULTADO E COMPREENDIDO ESTE MANUAL DE ASSISTÊNCIA TÉCNICA.**
- **O NÃO CUMPRIMENTO DESTE AVISO PODE POR EM PERIGO A SEGURANÇA DO TÉCNICO, OPERADOR OU PACIENTE DEVIDO A‘ CHOQUES ELÉTRICOS, MECÂNICOS OU OUTROS.**

AVISO
(PT-pt)

ESTE MANUAL DE ASSISTÊNCIA ESTÁ DISPONÍVEL APENAS EM INGLÊS.

- **SE QUALQUER OUTRO SERVIÇO DE ASSISTÊNCIA TÉCNICA, QUE NÃO A GEHC, SOLICITAR ESTES MANUAIS NOUTRO IDIOMA, É DA RESPONSABILIDADE DO CLIENTE FORNECER OS SERVIÇOS DE TRADUÇÃO.**
- **NÃO TENTE EFECTUAR REPARAÇÕES NO EQUIPAMENTO SEM TER CONSULTADO E COMPREENDIDO PREVIAMENTE ESTE MANUAL.**
- **A INOBSERVÂNCIA DESTE AVISO PODE RESULTAR EM FERIMENTOS NO TÉCNICO DE ASSISTÊNCIA, OPERADOR OU PACIENTE EM CONSEQUÊNCIA DE CHOQUE ELÉCTRICO, PERIGOS DE ORIGEM MECÂNICA, BEM COMO DE OUTROS TIPOS.**

AVVERTENZA
(IT)

IL PRESENTE MANUALE DI MANUTENZIONE È DISPONIBILE SOLTANTO IN INGLESE.

- **SE UN ADDETTO ALLA MANUTENZIONE ESTERNO ALLA GEHC RICHIEDE IL MANUALE IN UNA LINGUA DIVERSA, IL CLIENTE È TENUTO A PROVVEDERE DIRETTAMENTE ALLA TRADUZIONE.**
- **SI PROCEDA ALLA MANUTENZIONE DELL’APPARECCHIATURA SOLO DOPO AVER CONSULTATO IL PRESENTE MANUALE ED AVERNE COMPRESO IL CONTENUTO.**
- **NON TENERE CONTO DELLA PRESENTE AVVERTENZA POTREBBE FAR COMPIERE OPERAZIONI DA CUI DERIVINO LESIONI ALL’ADDETTO ALLA MANUTENZIONE, ALL’UTILIZZATORE ED AL PAZIENTE PER FOLGORAZIONE ELETTRICA, PER URTI MECCANICI OD ALTRI RISCHI.**

HOIATUS
(ET)

KÄESOLEV TEENINDUSJUHEND ON SAADAVAL AINULT INGLISE KEELES.

- **KUI KLIENDITEENINDUSE OSUTAJA NÕUAB JUHENDIT INGLISE KEELEST ERINEVAS KEELES, VASTUTAB KLIENT TÕLKETEENUSE OSUTAMISE EEST.**
- **ÄRGE ÜRITAGE SEADMEID TEENINDADA ENNE EELNEVALT KÄESOLEVA TEENINDUSJUHENDIGA TUTVUMIST JA SELLEST ARU SAAMIST.**
- **KÄESOLEVA HOIATUSE EIRAMINE VÕIB PÕHJUSTADA TEENUSEOSUTAJA, OPERAATORI VÕI PATSIENDI VIGASTAMIST ELEKTRILÖÖGI, MEHAANILISE VÕI MUU OHU TAGAJÄRJEL.**

VAROITUS
(FI)

TÄMÄ HUOLTO-OHJE ON SAATAVILLA VAIN ENGLANNIKSI.

- **JOS ASIAKKAAN PALVELUNTARJOAJA VAATII MUUTA KUIN ENGLANNINKIELISTÄ MATERIAALIA, TARVITTAVAN KÄÄNNÖKSEN HANKKIMINEN ON ASIAKKAAN VASTUULLA.**
- **ÄLÄ YRITÄ KORJATA LAITTEISTOA ENNEN KUIN OLET VARMASTI LUKENUT JA YMMÄRTÄNYT TÄMÄN HUOLTO-OHJEEN.**
- **MIKÄLI TÄTÄ VAROITUSTA EI NOUDATETA, SEURAUKSENA VOI OLLA PALVELUNTARJOAJAN, LAITTEISTON KÄYTTÄJÄN TAI POTILAAN VAHINGOITTUMINEN SÄHKÖISKUN, MEKAANISEN VIAN TAI MUUN VAARATILANTEEN VUOKSI.**

ΠΡΟΕΙΔΟΠΟΙΗΣΗ
(EL)

ΤΟ ΠΑΡΟΝ ΕΓΧΕΙΡΙΔΙΟ ΣΕΡΒΙΣ ΔΙΑΤΙΘΕΤΑΙ ΣΤΑ ΑΓΓΛΙΚΑ ΜΟΝΟ.

- **ΕΑΝ ΤΟ ΑΤΟΜΟ ΠΑΡΟΧΗΣ ΣΕΡΒΙΣ ΕΝΟΣ ΠΕΛΑΤΗ ΑΠΑΙΤΕΙ ΤΟ ΠΑΡΟΝ ΕΓΧΕΙΡΙΔΙΟ ΣΕ ΓΛΩΣΣΑ ΕΚΤΟΣ ΤΩΝ ΑΓΓΛΙΚΩΝ, ΑΠΟΤΕΛΕΙ ΕΥΘΥΝΗ ΤΟΥ ΠΕΛΑΤΗ ΝΑ ΠΑΡΕΧΕΙ ΥΠΗΡΕΣΙΕΣ ΜΕΤΑΦΡΑΣΗΣ.**
- **ΜΗΝ ΕΠΙΧΕΙΡΗΣΕΤΕ ΤΗΝ ΕΚΤΕΛΕΣΗ ΕΡΓΑΣΙΩΝ ΣΕΡΒΙΣ ΣΤΟΝ ΕΞΟΠΛΙΣΜΟ ΕΚΤΟΣ ΕΑΝ ΕΧΕΤΕ ΣΥΜΒΟΥΛΕΥΤΕΙ ΚΑΙ ΕΧΕΤΕ ΚΑΤΑΝΟΗΣΕΙ ΤΟ ΠΑΡΟΝ ΕΓΧΕΙΡΙΔΙΟ ΣΕΡΒΙΣ.**
- **ΕΑΝ ΔΕ ΛΑΒΕΤΕ ΥΠΟΨΗ ΤΗΝ ΠΡΟΕΙΔΟΠΟΙΗΣΗ ΑΥΤΗ, ΕΝΔΕΧΕΤΑΙ ΝΑ ΠΡΟΚΛΗΘΕΙ ΤΡΑΥΜΑΤΙΣΜΟΣ ΣΤΟ ΑΤΟΜΟ ΠΑΡΟΧΗΣ ΣΕΡΒΙΣ, ΣΤΟ ΧΕΙΡΙΣΤΗ Ή ΣΤΟΝ ΑΣΘΕΝΗ ΑΠΟ ΗΛΕΚΤΡΟΠΛΗΞΙΑ, ΜΗΧΑΝΙΚΟΥΣ Ή ΑΛΛΟΥΣ ΚΙΝΔΥΝΟΥΣ.**

FIGYELMEZTETÉS
(HU)

EZEN KARBANTARTÁSI KÉZIKÖNYV KIZÁRÓLAG ANGOL NYELVEN ÉRHETŐ EL.

- **HA A VEVŐ SZOLGÁLTATÓJA ANGOLTÓL ELTÉRŐ NYELVRE TART IGÉNYT, AKKOR A VEVŐ FELELŐSSÉGE A FORDÍTÁS ELKÉSZÍTTETÉSE.**
- **NE PRÓBÁLJA ELKEZDENI HASZNÁLNI A BERENDEZÉST, AMÍG A KARBANTARTÁSI KÉZIKÖNYVBEN LEÍRTAKAT NEM ÉRTELMEZTÉK.**
- **EZEN FIGYELMEZTETÉS FIGYELMEN KÍVÜL HAGYÁSA A SZOLGÁLTATÓ, MŰKÖDTETŐ VAGY A BETEG ÁRAMÜTÉS, MECHANIKAI VAGY EGYÉB VESZÉLYHELYZET MIATTI SÉRÜLÉSÉT EREDMÉNYEZHETI.**

VIÐVÖRUN
(IS)

ÞESSI ÞJÓNUSTUHANDBÓK ER EINGÖNGU FÁANLEG Á ENSKU.

- **EF ÞJÓNUSTUAÐILI VIÐSKIPTAMANNS ÞARFNAST ANNARS TUNGUMÁLS EN ENSKU, ER ÞAÐ Á ÁBYRGÐ VIÐSKIPTAMANNS AÐ ÚTVEGA ÞÝÐINGU.**
- **REYNIÐ EKKI AÐ ÞJÓNUSTA TÆKIÐ NEMA EFTIR AÐ HAFA SKOÐAÐ OG SKILIÐ ÞESSA ÞJÓNUSTUHANDBÓK.**
- **EF EKKI ER FARIÐ AÐ ÞESSARI VIÐVÖRUN GETUR ÞAÐ VALDIÐ MEIÐSLUM ÞJÓNUSTUVEITANDA, STJÓRNANDA EÐA SJÚKLINGS VEGNA RAFLOSTS, VÉLRÆNNAR EÐA ANNARRAR HÆTTU.**

VÝSTRAHA
(CS)

TENTO SERVISNÍ NÁVOD EXISTUJE POUZE V ANGLICKÉM JAZYCE.

- **V PŘÍPADĚ, ŽE POSKYTOVATEL SLUŽEB ZÁKAZNÍKŮM POTŘEBUJE NÁVOD V JINÉM JAZYCE, JE ZAJIŠTĚNÍ PŘEKLADU DO ODPOVÍDAJÍCÍHO JAZYKA ÚKOLEM ZÁKAZNÍKA.**
- **NEPROVÁDĚJTE ÚDRŽBU TOHOTO ZAŘÍZENÍ, ANIŽ BYSTE SI PŘEČETLI TENTO SERVISNÍ NÁVOD A POCHOPILI JEHO OBSAH.**
- **V PŘÍPADĚ NEDODRŽOVÁNÍ TÉTO VÝSTRAHY MŮŽE DOJÍT ÚRAZU ELEKTRICKÁM PROUDEM PRACOVNÍKA POSKYTOVATELE SLUŽEB, OBSLUŽNÉHO PERSONÁLU NEBO PACIENTŮ VLIVEM ELEKTRICKÉHOP PROUDU, RESPEKTIVE VLIVEM K RIZIKU MECHANICKÉHO POŠKOZENÍ NEBO JINÉMU RIZIKU.**

ADVARSEL
(DA)

DENNE SERVICEMANUAL FINDES KUN PÅ ENGELSK.

- **HVIS EN KUNDES TEKNIKER HAR BRUG FOR ET ANDET SPROG END ENGELSK, ER DET KUNDENS ANSVAR AT SØRGE FOR OVERSÆTTELSE.**
- **FORSØG IKKE AT SERVICERE UDSTYRET MEDMINDRE DENNE SERVICEMANUAL ER BLEVET LÆST OG FORSTÅET.**
- **MANGLENDE OVERHOLDELSE AF DENNE ADVARSEL KAN MEDFØRE SKADE PÅ GRUND AF ELEKTRISK, MEKANISK ELLER ANDEN FARE FOR TEKNIKEREN, OPERATØREN ELLER PATIENTEN.**

WAARSCHUWING
(NL)

DEZE ONDERHOUDSHANDLEIDING IS ENKEL IN HET ENGELS VERKRIJGBAAR.

- **ALS HET ONDERHOUDSPERSONEEL EEN ANDERE TAAL VEREIST, DAN IS DE KLANT VERANTWOORDELIJK VOOR DE VERTALING ERVAN.**
- **PROBEER DE APPARATUUR NIET TE ONDERHOUDEN VOORDAT DEZE ONDERHOUDSHANDLEIDING WERD GERAADPLEEGD EN BEGREPEN IS.**
- **INDIEN DEZE WAARSCHUWING NIET WORDT OPGEVOLGD, ZOU HET ONDERHOUDSPERSONEEL, DE OPERATOR OF EEN PATIËNT GEWOND KUNNEN RAKEN ALS GEVOLG VAN EEN ELEKTRISCHE SCHOK, MECHANISCHE OF ANDERE GEVAREN.**

BRĪDINĀJUMS (LV)

ŠĪ APKALPES ROKASGRĀMATA IR PIEEJAMA TIKAI ANGĻU VALODĀ.

- **JA KLIENTA APKALPES SNIEDZĒJAM NEPIECIEŠAMA INFORMĀCIJA CITĀ VALODĀ, NEVIS ANGĻU, KLIENTA PIENĀKUMS IR NODROŠINĀT TULKOŠANU.**
- **NEVEICIET APRĪKOJUMA APKALPI BEZ APKALPES ROKASGRĀMATAS IZLASĪŠANAS UN SAPRAŠANAS.**
- **ŠĪ BRĪDINĀJUMA NEIEVĒROŠANA VAR RADĪT ELEKTRISKĀS STRĀVAS TRIECIENA, MEHĀNISKU VAI CITU RISKU IZRAISĪTU TRAUMU APKALPES SNIEDZĒJAM, OPERATORAM VAI PACIENTAM.**

ĮSPĖJIMAS (LT)

ŠIS EKSPLOATAVIMO VADOVAS YRA IŠLEISTAS TIK ANGLŲ KALBA.

- **JEI KLIENTO PASLAUGŲ TEIKĖJUI REIKIA VADOVO KITA KALBA – NE ANGLŲ, VERTIMU PASIRŪPINTI TURI KLIENTAS.**
- **NEMĖGINKITE ATLIKTI ĮRANGOS TECHNINĖS PRIEŽIŪROS DARBŲ, NEBENT VADOVAUTUMĖTĖS ŠIUO EKSPLOATAVIMO VADOVU IR JĮ SUPRASTUMĖTE**
- **NEPAISANT ŠIO PERSPĖJIMO, PASLAUGŲ TEIKĖJAS, OPERATORIUS AR PACIENTAS GALI BŪTI SUŽEISTAS DĖL ELEKTROS SMŪGIO, MECHANINIŲ AR KITŲ PAVOJŲ.**

ADVARSEL (NO)

DENNE SERVICEHÅNDBOKEN FINNES BARE PÅ ENGELSK.

- **HVIS KUNDENS SERVICELEVERANDØR TRENGER ET ANNET SPRÅK, ER DET KUNDENS ANSVAR Å SØRGE FOR OVERSETTELSE.**
- **IKKE FORSØK Å REPARERE UTSTYRET UTEN AT DENNE SERVICEHÅNDBOKEN ER LEST OG FORSTÅTT.**
- **MANGLENDE HENSYN TIL DENNE ADVARSELEN KAN FØRE TIL AT SERVICELEVERANDØREN, OPERATØREN ELLER PASIENTEN SKADES PÅ GRUNN AV ELEKTRISK STØT, MEKANISKE ELLER ANDRE FARER.**

OSTRZEŻENIE (PL)

NINIEJSZY PODRĘCZNIK SERWISOWY DOSTĘPNY JEST JEDYNIE W JĘZYKU ANGIELSKIM.

- **JEŚLI FIRMA ŚWIADCZĄCA KLIENTOWI USłUGI SERWISOWE WYMAGA UDOSTĘPNIENIA PODRĘCZNIKA W JĘZYKU INNYM NIŻ ANGIELSKI, OBOWIĄZEK ZAPEWNIENIA STOSOWNEGO TłUMACZENIA SPOCZYWA NA KLIENCIE.**
- **NIE PRÓBOWAĆ SERWISOWAĆ NINIEJSZEGO SPRZĘTU BEZ UPRZEDNIEGO ZAPOZNANIA SIĘ Z PODRĘCZNIKIEM SERWISOWYM.**
- **NIEZASTOSOWANIE SIĘ DO TEGO OSTRZEŻENIA MOżE GROZIĆ OBRAŻENIAMI CIAłA SERWISANTA, OPERATORA LUB PACJENTA W WYNIKU PORAŻENIA PRĄDEM, URAZU MECHANICZNEGO LUB INNEGO RODZAJU ZAGROŻEŃ.**

ATENȚIE
(RO)

ACEST MANUAL DE SERVICE ESTE DISPONIBIL NUMAI ÎN LIMBA ENGLEZĂ.

- **DACĂ UN FURNIZOR DE SERVICII PENTRU CLIENȚI NECESITĂ O ALTĂ LIMBĂ DECÂT CEA ENGLEZĂ, ESTE DE DATORIA CLIENTULUI SĂ FURNIZEZE O TRADUCERE.**
- **NU ÎNCERCAȚI SĂ REPARAȚI ECHIPAMENTUL DECÂT ULTERIOR CONSULTĂRII ŞI ÎNȚELEGERII ACESTUI MANUAL DE SERVICE.**
- **IGNORAREA ACESTUI AVERTISMENT AR PUTEA DUCE LA RĂNIREA DEPANATORULUI, OPERATORULUI SAU PACIENTULUI ÎN URMA PERICOLELOR DE ELECTROCUTARE, MECANICE SAU DE ALTĂ NATURĂ.**

ОСТОРОЖНО!
(RU)

ДАННОЕ РУКОВОДСТВО ПО ОБСЛУЖИВАНИЮПРЕДОСТАВЛЯЕТСЯ ТОЛЬКО НА АНГЛИЙСКОМ ЯЗЫКЕ.

- **ЕСЛИ СЕРВИСНОМУ ПЕРСОНАЛУ КЛИЕНТА НЕОБХОДИМО РУКОВОДСТВО НЕ НА АНГЛИЙСКОМ ЯЗЫКЕ, КЛИЕНТУ СЛЕДУЕТ САМОСТОЯТЕЛЬНО ОБЕСПЕЧИТЬ ПЕРЕВОД.**
- **ПЕРЕД ОБСЛУЖИВАНИЕМ ОБОРУДОВАНИЯ ОБЯЗАТЕЛЬНО ОБРАТИТЕСЬ К ДАННОМУ РУКОВОДСТВУ И ПОЙМИТЕ ИЗЛОЖЕННЫЕ В НЕМ СВЕДЕНИЯ.**
- **НЕСОБЛЮДЕНИЕ УКАЗАННЫХ ТРЕБОВАНИЙ МОЖЕТ ПРИВЕСТИ К ТОМУ, ЧТО СПЕЦИАЛИСТ ПО ТЕХОБСЛУЖИВАНИЮ, ОПЕРАТОР ИЛИ ПАЦИЕНТ ПОЛУЧАТ УДАР ЗЛЕКТРИЧЕСКИМ ТОКОМ, МЕХАНИЧЕСКУЮ ТРАВМУ ИЛИ ДРУГОЕ ПОВРЕЖДЕНИЕ.**

ПРЕДУПРЕЖДЕНИЕ
(BG)

ТОВА СЕРВИЗНО РЪКОВОДСТВО Е НАЛИЧНО САМО НА АНГЛИЙСКИ ЕЗИК.

- **АКО ДОСТАВЧИКЪТ НА СЕРВИЗНИ УСЛУГИ НА КЛИЕНТ СЕ НУЖДАЕ ОТ ЕЗИК, РАЗЛИЧЕН ОТ АНГЛИЙСКИ, ЗАДЪЛЖЕНИЕ НА КЛИЕНТА Е ДА ПРЕДОСТАВИ ПРЕВОДАЧЕСКА УСЛУГА.**
- **НЕ СЕ ОПИТВАЙТЕ ДА ИЗВЪРШВАТЕ СЕРВИЗНО ОБСЛУЖВАНЕ НА ТОВА ОБОРУДВАНЕ, ОСВЕН ВСЛУЧАЙ, ЧЕ СЕРВИЗНОТО РЪКОВОДСТВО Е ПРОЧЕТЕНО И СЕ РАЗБИРА.**
- **НЕСПАЗВАНЕТО НА ТОВА ПРЕДУПРЕЖДЕНИЕ МОЖЕ ДА ДОВЕДЕ ДО НАРАНЯВАНЕ НА ДОСТАВЧИКА НА СЕРВИЗНИ УСЛУГИ, НА ОПЕРАТОРА ИЛИ ПАЦИЕНТА ВСЛЕДСТВИЕНА ТОКОВ УДАР, МЕХАНИЧНИ ИЛИ ДРУГИ РИСКОВЕ.**

UPOZORENJE
(SR)

OVAJ PRIRUČNIK ZA SERVISIRANJE DOSTUPAN JE SAMO NA ENGLESKOM JEZIKU.

- **AKO KLIJENTOV SERVISER ZAHTEVA JEZIK KOJI NIJE ENGLESKI, ODGOVORNOST JE NA KLIJENTU DA PRUŽI USLUGE PREVOĐENJA.**
- **NEMOJTE POKUŠAVATI DA SERVISIRATE OPREMU AKO NISTE PROČITALI I RAZUMELI PRIRUČNIK ZA SERVISIRANJE.**
- **AKO NE POŠTUJETE OVO UPOZORENJE, MOŽE DOĆI DO POVREĐIVANJA SERVISERA, OPERATERA ILI PACIJENTA UZROKOVANOG ELEKTRIČNIM UDAROM, MEHANIČKIM I DRUGIM OPASNOSTIMA.**

OPOZORILO
(SL)

TA SERVISNI PRIROČNIK JE NA VOLJO SAMO V ANGLEŠČINI.

- **ČE PONUDNIK SERVISNIH STORITEV ZA STRANKO POTREBUJE NAVODILA V DRUGEM JEZIKU, JE ZA PREVOD ODGOVORNA STRANKA SAMA.**
- **NE POSKUŠAJTE SERVISIRATI OPREME, NE DA BI PREJ PREBRALI IN RAZUMELI SERVISNI PRIROČNIK.**
- **ČE TEGA OPOZORILA NE UPOŠTEVATE, OBSTAJA NEVARNOST ELEKTRIČNEGA UDARA, MEHANSKIH ALI DRUGIH NEVARNOSTI IN POSLEDIČNIH POŠKODB PONUDNIKA SERVISNIH STORITEV, UPORABNIKA OPREME ALI PACIENTA.**

UPOZORENJE
(HR)

OVAJ SERVISNI PRIRUČNIK DOSTUPAN JE SAMO NA ENGLESKOM JEZIKU.

- **AKO KLIJENTOV SERVISER ZAHTIJEVA JEZIK KOJI NIJE ENGLESKI, ODGOVORNOST KLIJENTA JE PRUŽITI USLUGE PREVOĐENJA.**
- **NEMOJTE POKUŠAVATI SERVISIRATI OPREMU AKO NISTE PROČITALI I RAZUMJELI SERVISNI PRIRUČNIK.**
- **AKO NE POŠTUJETE OVO UPOZORENJE, MOŽE DOĆI DO OZLJEDE SERVISERA, OPERATERA ILI PACIJENTA PROUZROČENE STRUJNIM UDAROM, MEHANIČKIM I DRUGIM OPASNOSTIMA.**

UPOZORNENIE
(SK)

TÁTO SERVISNÁ PRÍRUČKA JE K DISPOZÍCII LEN V ANGLIČTINE.

- **AK ZÁKAZNÍKOV POSKYTOVATEĽ SLUŽIEB VYŽADUJE INÝ JAZYK AKO ANGLIČTINU, POSKYTNUTIE PREKLADATEĽSKÝCH SLUŽIEB JE ZODPOVEDNOSŤOU ZÁKAZNÍKA.**
- **NEPOKÚŠAJTE SA VYKONÁVAŤ SERVIS ZARIADENIA SKÔR, AKO SI NEPREČÍTATE SERVISNÚ PRÍRUČKU A NEPOROZUMIETE JEJ.**
- **ZANEDBANIE TOHTO UPOZORNENIA MÔŽE VYÚSTIŤ DO ZRANENIA POSKYTOVATEĽA SLUŽIEB, OBSLUHUJÚCEJ OSOBY ALEBO PACIENTA ELEKTRICKÝM PRÚDOM, PRÍPADNE DO MECHANICKÉHO ALEBO INÉHO NEBEZPEČENSTVA.**

VARNING
(SV)

DEN HÄR SERVICEHANDBOKEN FINNS BARA TILLGÄNGLIG PÅ ENGELSKA.

- **OM EN KUNDS SERVICETEKNIKER HAR BEHOV AV ETT ANNAT SPRÅK ÄN ENGELSKA ANSVARAR KUNDEN FÖR ATT TILLHANDAHÅLLA ÖVERSÄTTNINGSTJÄNSTER.**
- **FÖRSÖK INTE UTFÖRA SERVICE PÅ UTRUSTNINGEN OM DU INTE HAR LÄST OCH FÖRSTÅR DEN HÄR SERVICEHANDBOKEN.**
- **OM DU INTE TAR HÄNSYN TILL DEN HÄR VARNINGEN KAN DET RESULTERA I SKADOR PÅ SERVICETEKNIKERN, OPERATÖREN ELLER PATIENTEN TILL FÖLJD AV ELEKTRISKA STÖTAR, MEKANISKA FAROR ELLER ANDRA FAROR.**

DİKKAT
(TR)

BU SERVİS KILAVUZU YALNIZCA İNGİLİZCE OLARAK SAĞLANMIŞTIR.

- **EĞER MÜŞTERİ TEKNİSYENİ KILAVUZUN İNGİLİZCE DIŞINDAKİ BİR DİLDE OLMASINI İSTERSE, KILAVUZU TERCÜME ETTİRMEK MÜŞTERİNİN SORUMLULUĞUNDADIR.**
- **SERVİS KILAVUZUNU OKUYUP ANLAMADAN EKİPMANLARA MÜDAHALE ETMEYİNİZ.**
- **BU UYARININ GÖZ ARDI EDİLMESİ, ELEKTRİK ÇARPMASI YA DA MEKANİK VEYA DİĞER TÜRDEN KAZALAR SONUCUNDA TEKNİSYENİN, OPERATÖRÜN YA DA HASTANIN YARALANMASINA YOL AÇABİLİR.**

警告
(JA)

このサービスマニュアルには英語版しかありません。

GEHC 以外でサービスを担当される業者が英語以外の言語を要求される場合、翻訳作業はその業者の責任で行うものとさせていただきます。

このサービスマニュアルを熟読し理解せずに、装置のサービスを行わないで下さい。

この警告に従わない場合、サービスを担当される方、操作員あるいは患者さんが、感電や機械的又はその他の危険により負傷する可能性があります。

警告
(繁體中文)
Traditional Chinese

本服務手冊僅提供英文版。

- 如顧客之服務提供者需要英文版以外之語言， 顧客需自行負擔其翻譯服務之責任。
- 在查閱並了解本服務手冊之內容前，請勿試圖維修本設備。
- 未確實遵守本警告，可能導致服務提供者、操作者或病患遭受電擊、機械危險或其他傷害。

注意：
(ZH-CN)

本维修手册仅存有英文本。
非 GEHC 公司的维修员要求非英文本的维修手册时，
客户需自行负责翻译。
未详细阅读和完全了解本手册之前，不得进行维修。
忽略本注意事项会对维修员，操作员或病人造成触
电，机械伤害或其他伤害。

경고
(KO)

· 본 서비스 지침서는 영어로만 이용하실 수 있습니다.
· 고객의 서비스 제공자가 영어이외 언어를 요구할 경우, 번역 서비스 지침서를 제공하는 것은 고객의 책임입니다.
· 본 서비스 지침서를 지참했고 이해하지 않는 한은 해당 장비를 수리를 시도하지 마십시오.
· 이 경우에 유해하지 않은 전기쇼크, 기계상의 혹은 다른 위험으로부터 서비스 제공자, 운영자 혹은 환자에게
위험을 가할 수 있습니다.

Damage in Transportation

All packages should be closely examined at time of delivery. If damage is apparent, write “Damage In Shipment” on ALL copies of the freight or express bill BEFORE delivery is accepted or “signed for” by a GE representative or hospital receiving agent. Whether noted or concealed, damage MUST be reported to the carrier immediately upon discovery, or in any event, within 14 days after receipt, and the contents and containers held for inspection by the carrier. A transportation company will not pay a claim for damage if an inspection is not requested within this 14 day period.

Certified Electrical Contractor Statement - For USA Only

All electrical Installations that are preliminary to positioning of the equipment at the site prepared for the equipment shall be performed by licensed electrical contractors. Other connections between pieces of electrical equipment, calibrations and testing shall be performed by qualified GE personnel. In performing all electrical work on these products, GE will use its own specially trained field engineers. All of GE’s electrical work on these products will comply with the requirements of the applicable electrical codes.

The purchaser of GE equipment shall only utilize qualified personnel (i.e., GE’s field engineers, personnel of third-party service companies with equivalent training, or licensed electricians) to perform electrical servicing on the equipment.

Omission and Errors

If there are any omissions, errors or suggestions for improving this documentation, contact the GE Global Documentation Group with specific information listing the system type, manual title, part number, revision number, page number and suggestion details.

Mail the information to:

GE Medical Systems (China) Co., Ltd.
No. 19 Changjiang Road
Wuxi National Hi-Tech Dev. Zone
Jiangsu
P.R.China 214028

GE employees should use TrackWise to report service documentation issues.

These issues will then be in the internal problem reporting tool and communicated to the writer.

Service Safety Considerations

DANGER

DANGEROUS VOLTAGES, CAPABLE OF CAUSING DEATH, ARE PRESENT IN THIS EQUIPMENT. USE EXTREME CAUTION WHEN HANDLING, TESTING AND ADJUSTING.

WARNING

Use all Personal Protection Equipment (PPE) such as gloves, safety shoes, safety glasses, and kneeling pad, to reduce the risk of injury.

For a complete review of all safety requirements, refer to Chapter 1 in the Service Manual.

Legal Notes

The contents of this publication may not be copied or duplicated in any form, in whole or in part, without prior written permission of GE.

GE may revise this publication from time to time without written notice.

Trademarks

All products and their name brands are trademarks of their respective holders.

Copyrights

All Material Copyright © 2013-2014 by
General Electric Company Inc. All Rights Reserved.

Table of Contents

Translation policy - i-2
Damage in Transportation - i-11
Certified Electrical Contractor Statement - For USA Only - - - - - - - - - - - i-11
Omission and Errors - i-12
Service Safety Considerations - i-13
Legal Notes - i-14
Trademarks - i-14
Copyrights - i-14

Table of Contents

Chapter 1 — Introduction

Overview

Contents in This Chapter - 1-2

Manual Overview

Contents in This Manual - 1-3
Typical Users of the Proprietary Service Manual - - - - - - - - - - - - - - - - - 1-4
Venue 50 models covered by this manual - 1-5

Important Conventions

Conventions used in book - 1-6
Standard hazard icons - 1-8

Product Icons

Label Icon Description - 1-10
Labels Locations - 1-14

Safety Considerations

Contents in this section - 1-15
Introduction - 1-15
Human Safety - 1-16
Mechanical safety - 1-18
Electrical safety - 1-20
Battery Safety - 1-21

Dangerous Procedure Warnings

Lockout/Tagout (LOTO) Requirements

Returning Probes and Repair Parts

EMC, EMI and ESD

What is EMC? - 1-26
Compliance - 1-26
Electrostatic discharge (ESD) prevention - 1-27

Customer Assistance

Contact Information - 1-28
Phone Numbers for Customer Assistance - 1-29

System Manufacturer - 1-29

Chapter 2 — Site Preparations

Overview
Contents in This Chapter - 2-2
General Requirements
Contents in This Section - 2-3
Ultrasound system environmental requirements- - - - - - - - - - - - - - - - - - 2-3
Electrical requirements - 2-6
EMI limitations - 2-8
Probes environmental requirements - 2-10
Facility needs
Contents in This Section - 2-11
Purchaser responsibilities - 2-12
Required facility needs - 2-13
Desirable features- 2-13
Recommended and Alternate Ultrasound Room Layout - - - - - - - - - - - 2-14
Networking setup requirements - 2-16
Environmental Dangers
Patient Environment IEC60601-1 and ANSI AAMI ES60601-1 - - - - - - 2-19

Chapter 3 — System Setup

Overview
Contents in this chapter- 3-2
Setup reminders
Average setup time - 3-3
Setup warnings- 3-3
Receiving and unpacking the equipment
Contents in this section - 3-6
Receiving the Venue 50 - 3-7
Unpacking the Equipment - 3-8
Moving into Position - 3-21
Packing the Equipment - 3-21
Preparing for Setup
Verify customer order - 3-22
Physical inspection - 3-22
EMI protection - 3-22
Completing the setup
Purpose of this section - 3-23
Contents in this section - 3-23
Mounting the System to Docking Station/Cart - - - - - - - - - - - - - - - - - 3-24
Connecting probes - 3-25
Power On / Boot Up - 3-28
Power shut down - 3-28
System Configuration
System specifications - 3-29
Electrical specifications - 3-30
Approved peripherals - 3-31
Connecting Cables- 3-32

Peripheral/Accessories Connector Panel - 3-33
Available probes - 3-54
Software Options configuration - 3-55
Software version check-out - 3-55

Paperwork after setup

User’s Manual(s) - 3-56
Product Locator Installation Card - 3-56

Chapter 4 — General Procedures and Functional Checks

Overview

Contents in this chapter- 4-2
Equipment required- 4-2

General procedures

Overview - 4-3
Power ON/Boot Up - 4-4
Power shut down - 4-7
Adjusting the Display Monitor- 4-7

Functional checks

Overview - 4-8
Touch Panel- 4-9
Monitor Display- 4-10
Performance Tests - 4-11
Software Configuration Checks - 4-24
Peripheral Checks - 4-25

Chapter 5 — Components and Functions (Theory)

Overview

Contents in this chapter- 5-2

Block Diagram and Theory

Block Diagram of Venue 50 and Docking Station/Cart - - - - - - - - - - - - - 5-3

Chapter 6 — Service Adjustments

Overview

Contents in this chapter- 6-2

Monitor Adjustments

Adjust Brightness - 6-3
Adjust Volume - 6-3
Adjust Monitor on Docking Station/Cart- 6-4

Chapter 7 — Troubleshooting

Overview

Contents in this chapter- 7-2

Troubleshooting

Console Troubleshooting Trees - 7-3
Peripheral Troubleshooting Trees- 7-16
Battery Troubleshooting - 7-19

Remote Service

Gateway Installation - 7-20
Gateway Running - 7-25
Remote Software Download/Reload - 7-29
Remote Diagnostics - 7-36

Remote Log - 7-37

Chapter 8 — Replacement Procedures

Overview

Contents in this chapter- 8-2

Warnings and important information

Warnings - 8-3
Returning/shipping probes and repair parts - 8-5

Disassembly/Re-assembly

Warning and Caution - 8-6
Tools needed for servicing Venue 50 - 8-7
Docking Station Desk Support Assy - 8-8
Docking Cart Plastic Shelf - 8-9
Docking Cart Printer Shelf - 8-10

Loading Base Image Software

Purpose of this section - 8-13
Data Management - moving all images - 8-13
Recording important settings and parameters - - - - - - - - - - - - - - - - - - 8-14
Loading the System Software - 8-15

Used Media and Used Parts Disposal

Chapter 9 — Renewal Parts

Overview

Contents in this chapter - 9-2

List of Abbreviations

Renewal Parts Lists

Power Cables- 9-5
Top Assy - 9-7
Middle Cover Assy - 9-8
Bottom Assy- 9-9
Docking Station Assy - 9-11
Docking Cart Assy - 9-13
Accessories and Kits- 9-17
Probe - 9-18
Manuals- 9-19

Chapter 10 — Care and Maintenance

Overview

Periodic maintenance inspections - 10-2
Contents in this chapter- 10-2

Warnings

Why do maintenance

Keeping records - 10-4
Quality assurance- 10-4

Maintenance task schedule

How often should maintenance tasks be performed? - - - - - - - - - - - - - 10-5

Tools required

Standard GE tool kit - 10-7
GE-2 tool kit - 10-9
Special tools, supplies and equipment used for maintenance - - - - - - 10-10

System maintenance

Preliminary checks - 10-11
Functional checks - 10-12
Physical inspection - 10-14
Optional Diagnostic Checks - 10-14
Probe maintenance - 10-15
Battery Performance Maintenance - 10-17

Electrical safety tests

Overview - 10-18
Safety test overview - 10-20
Leakage current limits - 10-22
Outlet test - wiring arrangement - 10-24
Grounding continuity - 10-25
Chassis leakage current test - 10-26
Probe leakage current test - 10-29

When there's too much leakage current …

AC/DC Fails - 10-32
Enclosure Fails - 10-32
Probe Fails - 10-33
Peripheral Fails - 10-33
Still Fails - 10-33
New Unit - 10-33

Inspection Paperwork

Ultrasound Inspection Forms - 10-34

Index

Chapter 1

Introduction

This chapter describes important issues related to safely servicing the ultrasound system and Docking Station/Cart. The service provider must read and understand all the information presented here before installing or servicing the units.

Overview

Contents in This Chapter

- 'Overview' on *page 1-2*
- 'Manual Overview' on *page 1-3*
- 'Important Conventions' on *page 1-6*
- 'Product Icons' on *page 1-10*
- 'Safety Considerations' on *page 1-15*
- 'Dangerous Procedure Warnings' on *page 1-23*
- 'Lockout/Tagout (LOTO) Requirements' on *page 1-24*
- 'Returning Probes and Repair Parts' on *page 1-25*
- 'EMC, EMI and ESD' on *page 1-26*
- 'Customer Assistance' on *page 1-28*

Manual Overview

This manual provides installation and service information for the Venue 50 Ultrasound system and Docking Station/Cart. It is divided in ten chapters as shown below.

Contents in This Manual

The manual is divided into ten chapters.

In the beginning of the manual, before Chapter 1, you will find the *Revision overview*, the *Important precautions* including *Translation policy*, *Damage in transportation*, *Certified electrical contractor statement*, *Omission & errors*, *Service safety considerations* and *Legal notes*, and the *Table of Contents* (*TOC*).

An Index has been included after Chapter 10.

Table 1-1: Contents in this manual

Chapter number	Chapter title	Description
1.	'Introduction'	Contains a content summary and warnings.
2.	'Site Preparations'	Contains pre-setup requirements for the Venue 50.
3.	'System Setup'	Contains setup procedure with procedure checklist.
4.	'General Procedures and Functional Checks'	Contains functional checks that must be performed as part of the installation, or as required during servicing and periodic maintenance.
5.	'Components and Functions (Theory)'	Contains block diagrams and functional explanations of the electronics.
6.	'Service Adjustments'	Contains instructions on how to make any available adjustments to the Venue 50.
7.	'Troubleshooting'	Provides procedures for running diagnostic or related routines for the Venue 50.

Table 1-1: Contents in this manual (Continued)

Chapter number	**Chapter title**	**Description**
8.	'Replacement Procedures'	Provides disassembly procedures and reassembly procedures for all changeable FRU.
9.	'Renewal Parts'	Contains a complete list of replacement parts for Venue 50.
10.	'Care and Maintenance'	Provides periodic maintenance procedures for Venue 50.
N/A	Index	A quick way to the topic you're looking for.

Typical Users of the Proprietary Service Manual

- GEHC Service Personnel (setup, maintenance, etc.)
- GEHC Online Center Personnel
- Licensed Hospital's Service Providers

Venue 50 models covered by this manual

Table 1-2: Venue 50 Model Designations

Part Number	Description
5452256	Venue 50 Console
5448623	Venue 50 Console with film
5560851	Venue 50 Korean Console
5561656	Venue 50 China Console

NOTE: *When not otherwise specified, the contents of this manual applies to all Venue 50 models.*

Important Conventions

Conventions used in book

Important conventions, used in this document, are described next.

Model designations

This manual covers the Venue 50 Ultrasound systems listed in:

‘Venue 50 models covered by this manual’ on *page 1-5*.

Icons

Pictures, or icons, are used wherever they will reinforce the printed message. The icons, labels, and conventions used on the product and in the service information are described in this chapter.

Safety precaution messages

Various levels of safety precaution messages may be found on the equipment and in the service information. The different levels of concern are identified by a flag word that precedes the precautionary message. Known or potential hazards to personnel are labeled in one of three ways:

- DANGER
- WARNING
- CAUTION

d ⚠ DANGER	Danger is used to indicate the presence of a hazard that will cause severe personal injury or death if the instructions are ignored.
w ⚠ WARNING	Warning is used to indicate the presence of a hazard that can cause severe personal injury and property damage if instructions are ignored.
c ⚠ CAUTION	Caution is used to indicate the presence of a hazard that will or can cause minor personal injury and property damage if instructions are ignored. Equipment damage possible.

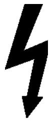
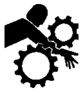
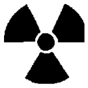
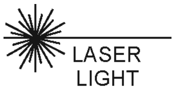
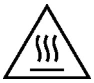
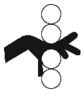
NOTE: *Notes are used to provide important information about an item or a procedure.*

NOTE: *Be sure to read the notes; the information contained in a note can often save you time or effort.*

Standard hazard icons

Important information will always be preceded by either the exclamation point (!) contained within a triangle, or the symbols for “Danger”, “Warning” or “Caution”, as seen throughout this chapter. In addition to text, several different graphical icons (symbols) may be used to make you aware of specific types of hazards that could possibly cause harm. Even if a symbol isn’t used in this manual, it may be included for your reference.

Table 1-3: Standard hazard icons

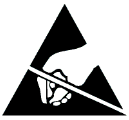
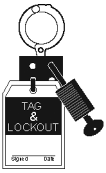
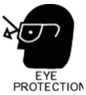
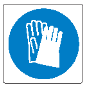
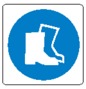
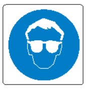
	ELECTRICAL
	MECHANICAL
	RADIATION
	LASER
	HEAT
	PINCH

NOTE: *Even if a symbol isn’t used on the product or in this manual, it may be included for your reference.*

Standard Icons that indicate that a special procedure is to be used

Some other icons make you aware of specific procedures that should be followed.

Table 1-4: Standard Icons that indicates that a special procedure is to be used

Avoid Static Electricity	Tag and Lock Out	Wear Eye Protection
		
Hand Protection	Foot Protection	Wear Eye Protection
		

Be sure to read the notes; the information contained in a note can often save you time or effort.

Product Icons

The following table describes the purpose and location of safety labels and other important information provided on the equipment.

Label Icon Description

The following table describes the purpose and location of safety labels and other important information provided on the equipment.

Table 1-5: Product Icons

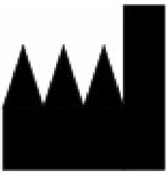
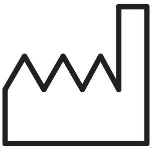
Label/Icon	Purpose/Meaning	Location
Identification and Rating Plate 	Manufacture's name and address	Rating Plate
Identification and Rating Plate 	**Date of manufacture**	Rating Plate
SN	**Serial number**	Rating Plate
REF	**Catalog Number**	Rating Plate
⎓	**Direct Current:** For products to be powered from a DC supply	Rating Plate

Table 1-5: Product Icons (Continued)

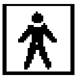
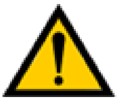
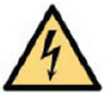
Label/Icon	Purpose/Meaning	Location
INPUT	Input	Rating Plate
Only for use with NZDOCK or NZCART	Only for use with NZDOCK or NZCART	Rating Plate
DESC.	Description	Rating Plate
Type/Class Label	Used to indicate the degree of safety or protection.	Rating Plate
IP Code (IPX8) IPX8: MKF 2 1S/1S-MED HID GP26	Indicates the degree of protection provided by the enclosure per IEC60 529. IPX8 can be used in an operating room environment.	Footswitch
EC REP	Authorized European Representative address.	
℞ ONLY U.S.	United States only Prescription Requirement label.	
	Type BF Applied Part (man in the box) symbol is in accordance with IEC 878-02-03.	Probe connector and Rating plate
	General Warning.	Various
	“CAUTION” - Dangerous voltage” (the lightning flash with arrowhead) is used to indicate electric shock hazards.	Various

Table 1-5: Product Icons (Continued)

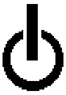
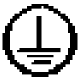
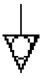
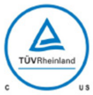
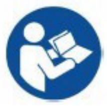
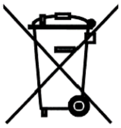
Label/Icon	Purpose/Meaning	Location
	"ON" indicates the power on position of the power switch. **CAUTION:** This Power Switch **DOES NOT ISOLATE** Mains Supply.	See the Console Overview section for location information.
	"Protective Earth" indicates the protective earth (grounding) terminal.	• Inside of AC adapter with docking station • docking cart
	"Equipotentiality" indicates the terminal to be used for connecting equipotential conductors when interconnecting (grounding) with other equipment. Connection of additional protective earth conductors or potential equalization conductors is not necessary in most cases and is only recommended for situations involving multiple equipment in a high-risk patient environment to provide assurance that all equipment is at the same potential and operates within acceptable leakage current limits. An example of a high-risk patient would be a special procedure where the patient has an accessible conductive path to the heart such as exposed cardiac pacing leads. IEC60417-5021	Docking Cart
	NRTL Listing and Certification Mark is used to designate conformance to nationally recognized product safety standards. The Mark bears the name and/ or logo of the testing laboratory, product category, safety standard to which conformity is assessed and a control number.	Rating Plate
	"Consult accompanying documents" is intended to alert the user to refer to the operator manual or other instructions when complete information cannot be provided on the label.	Various
	This symbol indicates that waste electrical and electronic equipment must not be disposed of as unsorted municipal waste and must be collected separately. Please contact an authorized representative of the manufacturer for information concerning the decommissioning of your equipment.	Rating Plate

Table 1-5: Product Icons (Continued)

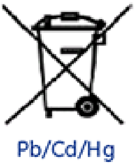
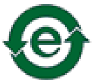
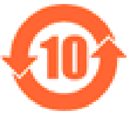
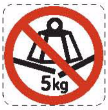
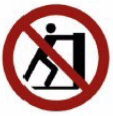
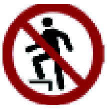
Label/Icon	Purpose/Meaning	Location
	The separate collection symbol is affixed to a battery, or its packaging, to advise you that the battery must be recycled or disposed of in accordance with local or country laws. The letters below the separate collection symbol indicate whether certain elements (Pb=Lead, Cd=Cadmium, Hg=Mercury) are contained in the battery. To minimize potential effects on the environment and human health, it is important that all marked batteries that you remove from the product are properly recycled or disposed. For information on how the battery may be safely removed from the device, please consult the service manual or equipment instructions. Information on the potential effects on the environment and human health of the substances used in batteries is available at this url: http://www.gehealthcare.com/euen/weee-recycling/index.html	Battery Pack if contains Pb/Cd/Hg
	No hazardous substance, above the maximum concentration value, is present. Maximum concentration values for electronic information products, as set by the People's Republic of China Electronic Industry Standard SJ/T11364-2006, include the hazardous substances of lead, mercury, hexavalent chromium, cadmium, polybrominated biphenyl (PBB), and polybrominated diphenyl ether (PBDE).	Bottom
	Indicates the presence of hazardous substance(s) above the maximum concentration value. Maximum concentration values for electronic information products, as set by the People's Republic of China Electronic Industry Standard SJ/T11364-2006, include the hazardous substances of lead, mercury, hexavalent chromium, cadmium, polybrominated biphenyl (PBB), and polybrominated diphenyl ether (PBDE). "10" indicates the number of years during which the hazardous substance(s) will not leak or mutate so that the use of this product will not result in any severe environmental pollution, bodily injury, or damage to any assets.	Rating Plate

Table 1-5: Product Icons (Continued)

Label/Icon	Purpose/Meaning	Location
РСТ	GOST symbol: Russia Regulatory Country Clearance.	Bottom Note: Only after Russian regulatory registration is complete, this label will be located on the console rating plate.
Segurança TÜVRheinland®	INMETRO Certification: TUV Rheinland Brazil	Back of the system Note: Only after Brazilian regulatory registration is complete, this label will be located on the console rating plate.
	Do not put anything weighed over 5kg on the shelf.	Printer shelf of Docking Cart
	Do not push the system	Back of Docking Cart and Rating Plate
	Do not step on the system	Base chassis covers of Docking Cart

Labels Locations

It is important to refer to the current revision of the Ultrasound system’s User Manual for a full list of product labels prior to servicing the system.

Safety Considerations

Contents in this section

- ‘Introduction’ on *page 1-15*
- ‘Human Safety’ on *page 1-16*
- ‘Mechanical safety’ on *page 1-18*
- ‘Electrical safety’ on *page 1-20*
- ‘Battery Safety’ on *page 1-21*

Introduction

The following safety precautions must be observed during all phases of operation, service and repair of this equipment. Failure to comply with these precautions or with specific warnings elsewhere in this manual, violates safety standards of design, manufacture and intended use of the equipment.

Human Safety

- Operating personnel must not remove the system covers.
- Servicing should be performed by authorized personnel only.

Only personnel who have participated in a Venue 50 Training Seminar are authorized to service the equipment.

d **DANGER**

DANGEROUS VOLTAGES, CAPABLE OF CAUSING DEATH, ARE PRESENT IN THIS EQUIPMENT. USE EXTREME CAUTION WHEN HANDLING, TESTING AND ADJUSTING.

w **WARNING**

If the covers are removed from an operating Venue 50, some metal surfaces may be warm enough to pose a potential heat hazard if touched, even while in shutdown mode.

w **WARNING**

Explosion Warning

DO NOT operate the equipment in an explosive atmosphere. Operation of any electrical equipment in such an environment constitutes a definite safety hazard.

w **WARNING**

DO NOT substitute parts or modify equipment

Because of the danger of introducing additional hazards, ONLY install GE approved parts. DO NOT perform any unauthorized modification of the equipment.

w **WARNING**

Risk of electrical shock, Ultrasound system must be turned off and disconnected from power source. Cord must be controlled at all times.

Wait for at least 20 seconds for capacitors to discharge as there are no test points to verify isolation.

Ultrasound system components may be energized. Always refer to the Ultrasound system's Proprietary Service Manual for LOTO warnings and cautions

Human Safety (continued)

⚠ WARNING

Use all Personal Protection Equipment (PPE) such as gloves, safety shoes, safety glasses, and kneeling pad, to reduce the risk of injury.

⚠ WARNING

Beware of possible sharp edges on all mechanical parts. If sharp edges are encountered, the appropriate PPE should be used to reduce the risk of injury.

⚠ WARNING

Wear all PPE including gloves as indicated in the chemical MSDS.

Mechanical safety

WARNING While the software install procedure is designed to preserve data, you should save any patient data, images, system setups to removable media or hardcopy before doing a software upgrade.

WARNING Ultrasound probes are highly sensitive medical instruments that can easily be damaged by improper handling. Use care when handling and protect from damage when not in use. Do not use a damaged or defective probe. Failure to follow these precautions can result in serious injury and equipment damage.

WARNING Never use a probe that has fallen to the floor. Even if it looks OK, it may be damaged.

CAUTION Do not move Docking Cart with big incline angle.

CAUTION When using Docking Cart, avoid water and blood enter into Docking Cart.

CAUTION Put peripherals in correct position to avoid Docking Cart overload.

Mechanical safety (continued)

NOTE: *Special care should be taken when transporting the unit in a vehicle:*

- *Before transporting, place the system in its special storage case.*
- *Ensure that the system is firmly secured while inside the vehicle.*
- Secure system with straps or as directed otherwise to prevent motion during transport.
- Prevent vibration damage by driving cautiously. Avoid unpaved roads, excessive speeds, and erratic stops or starts.

If the Venue 50 system is on a docking cart, please take special care of the following:

c CAUTION

Make sure the Venue 50 be fixed well to avoid the console falling down when moving Docking Cart.

w WARNING

When the Venue 50 is raised for a repair or moved along any incline, use external caution since it may become unstable and tip over.

c CAUTION

Venue 50 system weighs 4.0kg or more, depending on installed peripherals, when ready for use. Care must be used when moving it or replacing its parts.

ALWAYS:

- Use the handle to move the Ultrasound system.
- Do not let the Ultrasound system strike walls or door frame.

Electrical safety

Safe practices

Follow these guidelines to minimize shock hazards whenever you are using the Ultrasound system:

- To minimize shock hazard, the equipment chassis must be connected to an electrical ground.
- The Ultrasound system is equipped with a three-conductor AC power cable. This must be plugged into an approved electrical outlet with safety ground.
- The power outlet used for this equipment should not be shared with other types of equipment.
- Both the system power cable and the power connector must meet international electrical standards

WARNING Connecting a Venue 50 to the wrong voltage level will most likely destroy it.

Probes

Follow these guidelines before connecting a probe to the Ultrasound system:

- Inspect the probe prior to each use for damage or degradation to the:
  - housing
  - cable strain relief
  - lens
  - seal
  - connector pins
  - locking mechanism
- Do not use a damaged or defective probe.
- Never immerse the probe connector or adapter into any liquid.

Peripherals

Refer to the Patient Safety Environment section of the User’s Manual for peripheral isolation information.

Battery Safety

To avoid the risk of injury, follow the warning and cautions to make sure that the battery does not burst, ignite, or generate heat of fumes.

WARNING

- The battery has a safety device. Do not disassemble or alter the battery.
- Charge and discharge the batteries only when the ambient temperature is between 3°C and 40°C (37°F and 104°F).
- DO NOT short-circuit the battery by directly connecting the negative terminals with metal objects.
- DO NOT heat the battery or discard it in a fire.
- DO NOT expose the battery to temperature over 50°C (122°F). Keep it away from fire and other heat sources.
- DO NOT charge the battery near a heat source, such as a fire or heater.
- DO NOT leave the battery in direct sunlight.
- DO NOT pierce the battery with a sharp object, hit it, or step on it.
- DO NOT use a damaged battery.
- DO NOT solder a battery.
- DO NOT connect the battery to an electrical power outlet.

WARNING

If the Venue 50 is not being used on a monthly basis, the battery needs to be removed during the lengthy non-use period.

Battery Safety (continued)

CAUTION

To avoid the battery bursting, igniting, or fumes from the battery causing equipment damage, observe the following precautions:

- DO NOT immerse the battery in water or allow it to get wet.
- DO NOT put the battery into a microwave oven or pressurized container.
- If the battery leaks or emits an odor, remove it from all possible flammable sources.
- If the battery emits an odor or heat, is deformed or discolored, or in a way appears abnormal during use, recharging or storage, immediately remove it and stop using it. If you have any questions about the battery, consult GE or your local representative.
- Short term (less than one month) storage of battery pack:
    - Store the battery in a temperature range between -5°C (23°F) and 50°C (122°F).

CAUTION

- Long term (3 months or more) storage of battery pack:
    - Store the battery in a temperature range between -5°C (23°F) and 50°C (122°F)
    - Upon receipt of the Venue 50 and before first time usage, it is highly recommended that the customer performs one full discharge/charge cycle. If the battery has not been used for 2 months or more, the customer is recommended to perform one full discharge/charge cycle. It is also recommended to store the battery in a shady and cool area with FCC (full current capacity).
    - One Full Discharge/Charge Cycle Process:

      1. Full discharge of battery to let the Venue 50 automatically shut down.

      2. Charge the Venue 50 to 100% FCC (full current capacity).

      3. Discharge of Venue 50 for complete shut down (takes one hour for discharge).
    - When storing batteries for more than 6 months, charge the batteries at least once every 6 months to prevent leakage and deterioration in performance.
- Use only GE approved batteries.

Dangerous Procedure Warnings

Warnings, such as the example below, precede potentially dangerous procedures throughout this manual. Instructions contained in the warnings must be followed.

d **DANGER**

DANGEROUS VOLTAGES, CAPABLE OF CAUSING DEATH, ARE PRESENT IN THIS EQUIPMENT. USE EXTREME CAUTION WHEN HANDLING, TESTING AND ADJUSTING.

w **WARNING**

If the covers are removed from an operating Venue 50, some metal surfaces may be warm enough to pose a potential heat hazard if touched, even while in shutdown mode.

w **WARNING**

Explosion Warning

DO NOT operate the equipment in an explosive atmosphere. Operation of any electrical equipment in such an environment constitutes a definite safety hazard.

w **WARNING**

Shut down forcedly or remove ACDC plug may cause the damage of the system files.

Lockout/Tagout (LOTO) Requirements

Follow Lockout/Tagout requirements by ensuring you are in total control of the AC power plug at all times during the service process.

To apply Lockout/Tagout (LOTO):

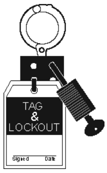
1. Plan and prepare for shutdown.
2. Shutdown the equipment.
3. Isolate the equipment.
4. Remove/disconnect the battery, if present.
5. Apply Lockout/Tagout Devices.
6. Control all stored and residual energy.
7. Verify isolation.

All potentially hazardous stored or residual energy is relieved.

WARNING

Energy Control and Power Lockout for Venue 50.

When servicing parts of the Ultrasound system where there is exposure to voltage greater than 30 volts:



1. Follow LOCK OUT/TAG OUT procedures.
2. Turn off the breaker.
3. Unplug the Ultrasound system.
4. Maintain control of the Ultrasound system power plug.
5. Wait for at least 30 seconds for capacitors to discharge as there are no test points to verify isolation.
6. Remove/disconnect the battery, if present.

Ultrasound System components may be energized.

Returning Probes and Repair Parts

Equipment being returned must be clean and free of blood and other infectious substances. GE policy states that body fluids must be properly removed from any part or equipment prior to shipment. GE employees, as well as customers, are responsible for ensuring that parts/equipment have been properly decontaminated prior to shipment. Under no circumstance should a part or equipment with visible body fluids be taken or shipped from a clinic or site (for example, body coils or an ultrasound probe).

The purpose of the regulation is to protect employees in the transportation industry, as well as the people who will receive or open this package.

NOTE: *The US Department of Transportation (DOT) has ruled that "items that were saturated and/or dripping with human blood that are now caked with dried blood; or which were used or intended for use in patient care" are "regulated medical waste" for transportation purposes and must be transported as a hazardous material.*

NOTE: *The USER/SERVICE staff should dispose of all the waste properly, per federal, state, and local waste disposal regulations.*

The Ultrasound system is not meant to be used for long-term storage of patient data or images. The user is responsible for the data on the system and a regular backup is highly recommended.

If the system is sent for repair, please ensure that any patient information is backed up and erased from the system before shipping. It is always possible during system failure and repair to lose patient data. GE is not responsible for the loss of this data.

If PHI (Patient Healthcare Information) data needs to be sent to GE employees for service purposes, GE will ascertain agreement from the customer. Patient information shall only be transferred by approved service processes, tools and devices restricting access, protecting or encrypting data where required, and providing traceability in the form of paper or electronic documents at each stage of the procedure while maintaining compliance with cross-border restrictions of patient information transfers.

EMC, EMI and ESD

What is EMC?

Electromagnetic compatibility describes a level of performance of a device within its electromagnetic environment. This environment consists of the device itself and its surroundings including other equipment, power sources and persons with which the device must interface. Inadequate compatibility results when a susceptible device fails to perform as intended due interference from its environment or when the device produces unacceptable levels of emission to its environment. This interference is often referred to as radio–frequency or electromagnetic interference (RFI/EMI) and can be radiated through space or conducted over interconnecting power of signal cables. In addition to electromagnetic energy, EMC also includes possible effects from electrical fields, magnetic fields, electrostatic discharge and disturbances in the electrical power supply.

Compliance

Venue 50 conforms to all applicable conducted and radiated emission limits and to immunity from electrostatic discharge, radiated and conducted RF fields, magnetic fields and power line transient requirements.

For applicable standards, refer to the Safety Chapter of the Ultrasound system's User's Manual.

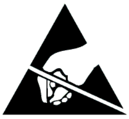
NOTE: *For CE Compliance, it is critical that all covers, screws, shielding, gaskets, mesh, clamps, are in good condition, installed tightly without skew or stress. Proper installation following all comments noted in this service manual is required in order to achieve full EMC performance.*

Electrostatic discharge (ESD) prevention

WARNING

DO NOT touch any boards with integrated circuits prior to taking the necessary ESD precautions.

Follow general guidelines for handling of electrostatic sensitive equipment.



WARNING

Risk of electrical shock, Ultrasound system must be turned off. Avoid all contact with electrical contacts, conductors and components. Always use non-conductive handles designed for the removal and replacement of ESD sensitive parts. All parts that have the potential for storing energy must be discharged or isolated before making contact.

Customer Assistance

Contact Information

If this equipment does not work as indicated in this service manual or in the user manual, or if you require additional assistance, please contact the local distributor or appropriate support resource, as listed below.

Prepare the following information before you call:

1. System ID serial number.
2. Software version.
3. Date and time of occurrence.
4. Sequence of events leading to issue.
5. Is the issue repeatable?
6. Imaging mode, probe, preset/application.
7. Media brand, speed, capacity, type.
8. Save image capture, cine loop.

NOTE: Restart the application before resuming clinical scanning.

Phone Numbers for Customer Assistance

Table 1-6: Phone numbers for Customer Assistance

LOCATION	PHONE NUMBER	
USA GE Healthcare - GE Medical Systems Ultrasound & Primary Care Diagnostics, LLC 9900 Innovation Drive Wauwatosa, WI 53226	Service: On-site	1-800-437-1171
	Service Parts	1-800-558-2040
	Application Support	1-800-682-5327 or 1-262-524-5698
Canada	Phone	1-800-668-0732
Latin America	Service	1-800-321-7937
	Application Support	1-262-524-5698
Europe (OLC-EMEA) GE Ultraschall Deutschland Gmbh & Co. KG Beethovenstrasse 239 Postfach 11 05 60, D-42655 Solingen Germany	OLC - EMEA Phone:	+49 (0) 212-2802-652 +33 1 3083 1300
	Fax:	+49 (0) 2122-8024-31
Online Services Ultrasound Asia	Phone:	
	• Australia	+(61) 1-800-647-855
	• China	+(86) 800-810-8188
	• India	+(91) 1800-425-8025
	• Japan	+(81) 42-645-2940
	• Korea	+(82) 2620 13585
	• Singapore	+(95) 6277-3444

System Manufacturer

Table 1-7: System manufacturer

MANUFACTURER	PHONE NUMBER	FAX NUMBER
GE Medical Systems (China) Co., Ltd. No.19 Changjiang Road WuXi National Hi-Tech Development Zone Jiangsu P.R.China 214028	+86 510 85225888	+86 510 85226688

Chapter 2

Site Preparations

This chapter provides the information required to plan and prepare for the setup of an ultrasound system and Docking Station/Cart. Included are descriptions of the facility and electrical needs to be met by the purchaser of the units.

Overview

Contents in This Chapter

- ‘Overview’ on *page 2-2*
- ‘General Requirements’ on *page 2-3*
- ‘Facility needs’ on *page 2-11*
- ‘Environmental Dangers’ on *page 2-19*

General Requirements

Contents in This Section

- ‘Ultrasound system environmental requirements’ on *page 2-3*
- ‘Electrical requirements’ on *page 2-6*
- ‘EMI limitations’ on *page 2-8*
- ‘Probes environmental requirements’ on *page 2-10*

Ultrasound system environmental requirements

If the Ultrasound system is very cold or hot

When unpacking the Ultrasound system, allow the temperature of the Ultrasound system to stabilize before powering up. The following table describes guidelines for reaching operational temperatures from storage or transport temperatures.

⚠ CAUTION

If the Ultrasound system is very cold or hot, do not turn on its power until it has had a chance to acclimate to its operating environment.

Table 2-1: Ultrasound system acclimate time

ºC	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70
ºF	-40	-31	-22	-13	-4	5	14	23	32	41	50	59	68	77	86	95	104	113	122	131	140	149	158
Hrs	20	18	16	14	12	10	8	6	4	2	0	0	0	0	0	0	0	2	4	6	8	10	12

Environmental specifications for Ultrasound system

The system should be operated, stored, or transported within the parameters outlined below. Either its operational environment must be constantly maintained or the unit must be turned off.

Table 2-2: System Environmental Requirements

	Operational	Storage	Transport
Temperature	3 - 40°C 37 - 104°F	-5 - 50°C 23 - 122°F	-5 - 50°C 23 - 122°F
Humidity	30 - 80% non-condensing	10 - 90% non-condensing	10 - 90% non-condensing
Pressure	700 - 1060hPa	700 - 1060hPa	700 - 1060hPa

Cooling

The cooling requirement for a console Ultrasound system with monitor and on board peripherals, is up to 3800 BTU/h. This figure does not include cooling needed for lights, people, or other equipment in the room.

NOTE: *Each person in the room places an additional 300 BTU/h demand on the cooling system.*

NOTE: *Temperature in degrees Celsius (°C) conversion to degrees F (°F): (°F) = (°C * 9/5) + 32*

⚠ CAUTION Ensure that the probe face temperature does not exceed the normal operation temperature range.

⚠ CAUTION The Venue 50 system and probe connector is not waterproof. Do not expose the device to water or any kind of liquid.

Lighting

Bright light is needed for Ultrasound system installation, updates and repairs. However, operator and patient comfort may be optimized if the room light is subdued and indirect. Therefore a combination lighting system (dim/bright) is recommended. Keep in mind that lighting controls and dimmers can be a source of EMI which could degrade image quality. These controls should be selected to minimize possible interference.

Electrical requirements

General requirements

NOTE: *GE requires a dedicated power and ground for the proper operation of its Ultrasound equipment. This dedicated power shall originate at the last distribution panel before the Ultrasound system.*

Sites with a mains power system with defined Neutral and Live:

The dedicated line shall consist of one phase, a neutral (not shared with any other circuit), and a full size ground wire from the distribution panel to the Ultrasound outlet.

Sites with a mains power system without a defined Neutral:

The dedicated line shall consist of one phase (two lines), not shared with any other circuit, and a full size ground wire from the distribution panel to the Ultrasound outlet.

NOTE: *Please note that image artifacts can occur, if at any time within the facility, the ground from the main facility's incoming power source to the Ultrasound system is only a conduit.*

Electrical requirements for the Ultrasound system

Table 2-3: Electrical Specifications for Venue 50 system

Voltage	Power	Current	Frequency
100-240 VAC	180 VA max.	1.6A (max)	50/60HZ

Table 2-4: Electrical Specifications for Docking Cart

Voltage	Power	Current	Frequency
100-240 VAC	380 VA max.	2.7A (max)	50/60HZ

Inrush Current

Inrush current is not a factor to consider due to the inrush current limiting properties of the power supplies.

Table 2-5: Inrush Current

Voltage	Inrush Current
100V	75A (max)
240V	120A (max)

Site circuit breaker

CAUTION Power outage may occur. The Venue 50 requires a dedicated single branch circuit. To avoid circuit overload and possible loss of critical care equipment, make sure you do not have any other equipment operating on the same circuit.

It is recommended that the branch circuit breaker for the Ultrasound system be readily accessible.

Site power outlets

A dedicated AC power outlet must be within reach of the Ultrasound system without extension cords. Other outlets adequate for the external peripherals, medical and test equipment needed to support this Ultrasound system must also be present within 1 m (3.2 ft.) of the Ultrasound system. Electrical installation must meet all current local, state, and national electrical codes.

Unit power plug

If the Ultrasound system arrives without a power plug, or with the wrong plug, you must contact your GE dealer or the installation engineer must supply what is locally required.

Power stability requirements

Voltage drop-out:

Max 10 ms.

Power transients (all applications):

Less than 25% of nominal peak voltage for less than 1 millisecond for any type of transient, including line frequency, synchronous, asynchronous, or aperiodic transients.

EMI limitations

Ultrasound systems are susceptible to Electromagnetic Interference (EMI) from radio frequencies, magnetic fields, and transients in the air or wiring. They also generate EMI. The Ultrasound system complies with limits as stated on the EMC label. However there is no guarantee that interference will not occur in a particular installation.

Possible EMI sources should be identified before the Ultrasound system is installed.

Electrical and electronic equipment may produce EMI unintentionally as the result of a defect. Some of these sources include:

- medical lasers
- scanners
- cauterizing guns
- computers
- monitors
- fans
- gel warmers
- microwave ovens
- light dimmers
- mobile phones
- in-house wireless phones (DECT phones)
- wireless computer keyboard and mouse
- air conditioning system
- High Frequency (HF) surgery equipment
- general AC/DC adapters

The presence of a broadcast station or broadcast van may also cause interference.

See: ‘EMI prevention/abatement’ on *page 2-9* for EMI prevention tips.

EMI prevention/abatement

Table 2-6: EMI prevention/abatement

EMI RULE	DETAILS
Be aware of Radio Frequency sources	• Keep the Ultrasound system at least 5 meters (15 feet) away from other EMI sources. • Special shielding may be required to eliminate interference problems caused by high frequency, high powered radio or video broadcast signals.
Ground the Ultrasound system	Poor grounding is the most likely reason an Ultrasound system will have noisy images. Check grounding of the power cord and power outlet.
Replace all screws, Radio Frequency gaskets, covers, cores	• After you finish repairing or updating the Ultrasound system, replace all covers and tighten all screws. • Any cable with an external connection requires a magnet wrap at each end. • Install all covers. Loose or missing covers or Radio Frequency gaskets allow radio frequencies to interfere with the ultrasound signals.
Replace broken Radio Frequency gaskets	If more than 20% or a pair of the fingers on an Radio Frequency gasket are broken, replace the gasket. Do not turn on the Ultrasound system until any loose metallic part is removed.
Do not place labels where Radio Frequency gaskets touch metal	Where applicable, never place a label where Radio Frequency gaskets meet the Ultrasound system. Otherwise, the gap created will permit Radio Frequency leakage. Or, if a label has been found in such a position, move the label.
Use GE specified harnesses and peripherals	The interconnect cables are grounded and require ferrite beads and other shielding. Also, cable length, material, and routing are all important; do not change from what is specified.
Take care with cellular phones	Cellular phones may transmit a 5 V/m signal; that could cause image artifacts.
Properly route peripheral cables	Where applicable, do not allow cables to lie across the top of the Card Rack or hang out of the peripheral bays. Loop the excess length for peripheral cables inside the peripheral bays. Attach the monitor cables to the frame.

Probes environmental requirements

Operation and storage temperatures for probes

Table 2-7: Operation and storage temperatures for probes

Conditions	Temperature
Operation:	10 to 40°C (50 to 104°F)
Storage:	-5 to 50°C (23 to 122°F)
Temperature in degrees Celsius (°C) conversion to degrees F (°F): (°F) = (°C * 9/5) + 32	

NOTE: Systems and electronic probes are designed for storage temperatures of -5 to +50°C. When exposed to large temperature variations, the product should be kept in room temperature for 10 hours before use.

Facility needs

Contents in This Section

- 'Purchaser responsibilities' on *page 2-12*
- 'Required facility needs' on *page 2-13*
- 'Desirable features' on *page 2-13*
- 'Recommended and Alternate Ultrasound Room Layout' on *page 2-14*
- 'Networking setup requirements' on *page 2-16*

Purchaser responsibilities

The work and materials needed to prepare the site is the responsibility of the purchaser. Delay, confusion, and waste of manpower can be avoided by completing pre-installation work before delivery. Purchaser responsibility includes:

- Procuring the materials required
- Completing the preparations before delivery of the Ultrasound system
- Paying the costs for any alterations and modifications not specifically provided in the sales contract

NOTE: *All electrical installations that are preliminary to the positioning of the equipment at the site prepared for the equipment must be performed by licensed electrical contractors. Other connections between pieces of electrical equipment, calibrations, and testing must also be performed by qualified personnel.*

NOTE: *The products involved (and the accompanying electrical installations) are highly sophisticated and special engineering competence is required. All electrical work on these products must comply with the requirements of applicable electrical codes. The purchaser of GE equipment must only utilize qualified personnel to perform electrical servicing on the equipment.*

The desire to use a non–listed or customer provided product or to place an approved product further from the Ultrasound system than the interface kit allows, presents challenges to the installation team. To avoid delays during installation, such variances should be made known to the individuals or group performing the installation at the earliest possible date (preferably prior to the purchase).

The ultrasound suite must be clean prior to delivery of the Ultrasound system. Carpet is not recommended because it collects dust and creates static. Potential sources of EMI (electromagnetic interference) should also be investigated before delivery. Dirt, static, and EMI can negatively impact Ultrasound system reliability.

Required facility needs

- Dedicated single branch power outlet of adequate amperage meeting all local and national codes which is located less than 2.5 m (8 ft.) from the unit’s proposed location
- Door opening is at least 76 cm (30 in) wide
- Proposed location for unit is at least 0.2m (0.67 ft.) from the wall for cooling
- Power outlet and place for any external peripheral are within 2 m (6.5 ft.) of each other with peripheral within 1 m of the unit to connect cables.
- Power outlets for other medical equipment and gel warmer
- Power outlets for test equipment and modem within 1 m (3.2 ft.) of unit
- Clean and protected space to store transducers (in their cases or on a rack)
- Material to safely clean probes (done with a plastic container, never metal)

See ‘Electrical requirements’ on *page 2-6 for more information.*

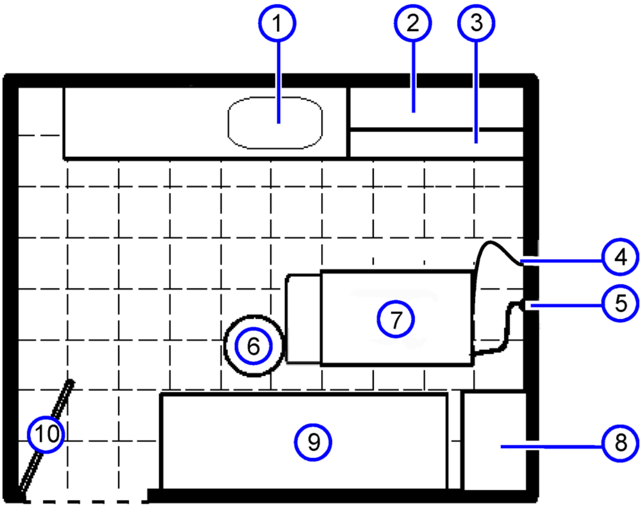
Desirable features

- Circuit breaker for dedicated power outlet is easily accessible
- Sink with hot and cold water
- Receptacle for bio–hazardous waste, like used probe sheaths
- Emergency oxygen supply
- Storage for linens and equipment
- Nearby waiting room, lavatory, and dressing room
- Dual level lighting (bright and dim)
- Lockable cabinet ordered by GE for its software and proprietary manuals

Recommended and Alternate Ultrasound Room Layout

A minimal floor plan and recommended standard floor plan for ultrasound equipment:

Minimal floor plan suggestion



Scale:
Each square equals one square foot (app. 31 x 31 cm)

1. Sink
2. Linens
3. Probes / supplies
4. Ethernet Connector
5. Power outlet
6. Stool
7. Ultrasound system
8. GE cabinet for software and manuals (optional)
9. Examination table
10. Door (76 cm)

Figure 2-1. Minimal floor plan, 2.5 m x 3 m (8 by 10 foot)

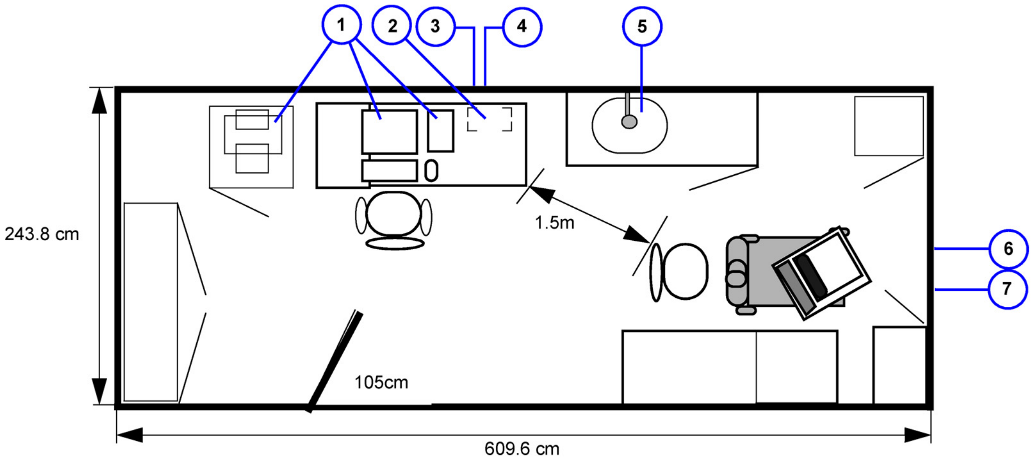
Recommended floor plan suggestion

Add graphic here, when available.

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.

Figure 2-2. A 14 by 17 foot recommended floor plan

Suggested floor plan, Ultrasound system, and EchoPAC PC in same room



1. EchoPAC PC workstation parts
2. UPS
3. Ethernet network wall outlet
4. 3x mains power outlets
5. Hot and Cold water
6. Dedicated mains power outlet
7. Ethernet network wall outlet

Figure 2-3. Suggested Room with EchoPAC PC workstation and Ultrasound Scanner

Networking setup requirements

Stand alone Ultrasound system (without network connection)

None.

Scanner connected to hospital's network

Supported networks:

Wireless LAN

Purpose of DICOM network function

DICOM services provide the operator with clinically useful features for moving images and patient information over a hospital network.

Examples of DICOM services include the transfer of images to workstations for viewing or transferring images to remote printers.

As an added benefit, transferring images in this manner frees up the on-board monitor and peripherals, enabling viewing to be done while scanning continues.

With DICOM, images can be archived, stored, and retrieved faster, easier, and at a lower cost.

DICOM Option Pre-installation requirements

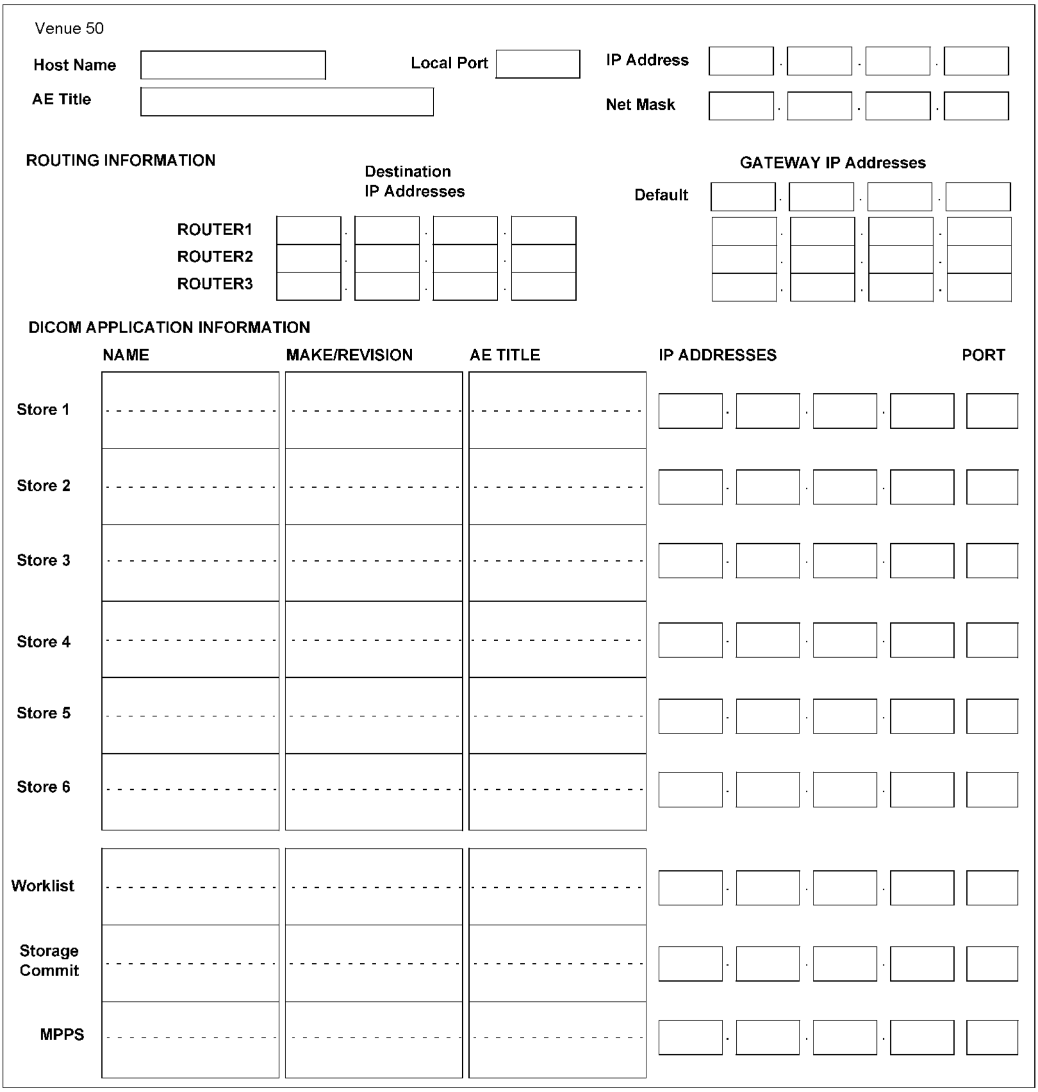
To configure the Ultrasound system to work with other network connections, the site’s network administrator must provide information to complete the form “Worksheet for DICOM Network Information”. Ensure that there are no spaces in any field of the form.

See:

Entries must include:

- A host name, local port number, AE Title, IP address and Net Mask for the Ultrasound system.
- The IP addresses for the default gateway and other routers at the site for ROUTING INFORMATION.
- The host name, IP address, port and AE Title for each device the site wants connected to the Ultrasound system for DICOM APPLICATION INFORMATION. A field for the make (manufacturer) and the revision of the device, is also included. This information may be useful for error solving.

DICOM Option Pre-installation requirements (continued)



Venue 50

Host Name ____ **Local Port** ____ **IP Address** ___ . ___ . ___ . ___

AE Title ____ **Net Mask** ___ . ___ . ___ . ___

ROUTING INFORMATION

	Destination IP Addresses	GATEWAY IP Addresses
Default		___ . ___ . ___ . ___
ROUTER1	___ . ___ . ___ . ___	___ . ___ . ___ . ___
ROUTER2	___ . ___ . ___ . ___	___ . ___ . ___ . ___
ROUTER3	___ . ___ . ___ . ___	___ . ___ . ___ . ___

DICOM APPLICATION INFORMATION

	NAME	MAKE/REVISION	AE TITLE	IP ADDRESSES	PORT
Store 1				___ . ___ . ___ . ___	
Store 2				___ . ___ . ___ . ___	
Store 3				___ . ___ . ___ . ___	
Store 4				___ . ___ . ___ . ___	
Store 5				___ . ___ . ___ . ___	
Store 6				___ . ___ . ___ . ___	
Worklist				___ . ___ . ___ . ___	
Storage Commit				___ . ___ . ___ . ___	
MPPS				___ . ___ . ___ . ___	

Figure 2-4. Worksheet for DICOM Network Information

Environmental Dangers

Commercial devices such as laser cameras, printers, VCRs and external monitors, usually exceed allowable leakage current limits and, when plugged into separate AC outlets, are in violation of patient safety standards. Suitable electrical isolation of such external AC outlets, or providing the device with extra protective earth, will be required in order to meet UL60601-1 and IEC60601-1 standards for electrical leakage.

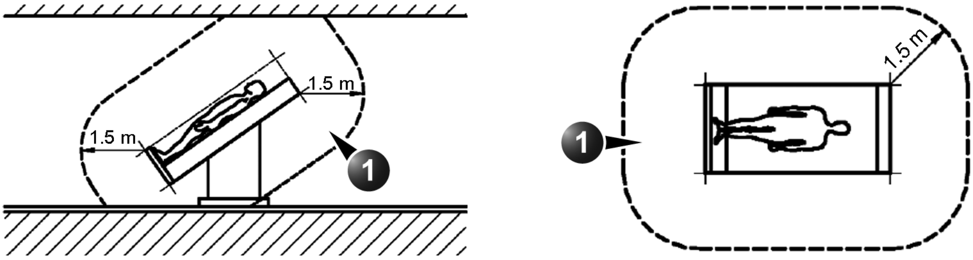
Patient Environment IEC60601-1 and ANSI AAMI ES60601-1

Sub Clause 3.79 and figure A.9 (IEC60601-1:2005 and ANSI AAMI ES60601-1:2005)

Such an area is an environment in which medical diagnosis, monitoring or treatment is carried out. It is very difficult to attach unique dimensions to the PATIENT ENVIROMENT.

In practice a distance of 2,5 m (8.2 ft.) above the floor on which the medical personnel stand and a horizontal distance of 1,5 m (4.9 ft.) have justified themselves as indicative of the dimensions of the Patient Environment.

The patient environment/vicinity will be depicted as a dashed line in this procedure. See example below.



1. Patient environment

Figure 2-5. Patient environment

Chapter 3

System Setup

This chapter contains information needed to install Venue 50 system.

Included is a procedure that describes how to receive and unpack the equipment and how to file a damage or loss claim.

How to prepare the facility and unit of the actual installation, and how to check and test the unit, probes, and external peripherals for electrical safety are also included in this procedure.

Overview

Contents in this chapter

- 'Overview' on *page 3-2*
- 'Setup reminders' on *page 3-3*
- 'Receiving and unpacking the equipment' on *page 3-6*
- 'Preparing for Setup' on *page 3-22*
- 'Completing the setup' on *page 3-23*
- 'System Configuration' on *page 3-29*
- 'Paperwork after setup' on *page 3-56*

Setup reminders

Average setup time

- Unpacking the Venue 50: 20 minutes
- Set up Venue 50 wo/options: 30 minutes (dependent on the configuration that is required)
- DICOM Network Configuration: 30 minutes

The Venue 50 installation and functional checkout will take approximately one hour. Venue 50 console with optional equipment may take slightly longer.

Setup warnings

DANGER WHEN USING ANY TEST INSTRUMENT THAT IS CAPABLE OF OPENING THE AC GROUND LINE (I.E., METER'S GROUND SWITCH IS OPEN), DON'T TOUCH THE ULTRASOUND SYSTEM!

CAUTION To prevent electrical shock, connect the unit to a properly grounded power outlet. Do not use a three to two prong adapter. This defeats safety grounding.

CAUTION Do not wear the ESD wrist strap when you work on live circuits and more than 30 V peak is present.

CAUTION Do not operate this unit unless all board covers and frame panels are securely in place. System performance and cooling require this.

Setup warnings (continued)

1. There are no operator serviceable components. To prevent shock, do not remove any covers or panels. Should problems or malfunctions occur, unplug the power cord. Only qualified service personnel should carry out servicing.

NOTE: *For information regarding packing labels, refer to LABELS ON PACKAGE.*

DANGER Equipment damage possibility. Turning the system on without acclimation after arriving at site may cause the system to be damaged.

CAUTION If the Ultrasound system is very cold or hot, do not turn on its power until it has had a chance to acclimate to its operating environment.

The following table describes guidelines for reaching operational temperatures from storage or transport temperatures.

ºC	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70
ºF	-40	-31	-22	-13	-4	5	14	23	32	41	50	59	68	77	86	95	104	113	122	131	140	149	158
Hrs	20	18	16	14	12	10	8	6	4	2	0	0	0	0	0	0	0	2	4	6	8	10	12

DANGER WHEN USING ANY TEST INSTRUMENT THAT IS CAPABLE OF OPENING THE AC GROUND LINE (I.E., METER'S GROUND SWITCH IS OPEN), DON'T TOUCH THE UNIT!

Setup warnings (continued)

d DANGER

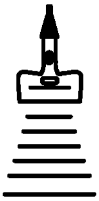
Do not operate this unit unless all board covers are securely in place.

c CAUTION

Operator Manual(s)

The User Manual(s) should be fully read and understood before operating the Venue 50 and kept near the Ultrasound system for quick reference.

c CAUTION



Acoustic Output Hazard

Although the ultrasound energy transmitted from the Venue 50 probe is within AIUM/NEMA standards, avoid unnecessary exposure. ultrasound energy can produce heat and mechanical damage.

Receiving and unpacking the equipment

Contents in this section

- 'Receiving the Venue 50' on *page 3-7*
- 'Unpacking the Venue 50' on *page 3-9*
- 'Unpacking Docking Station' on *page 3-13*
- 'Unpacking Docking Cart' on *page 3-16*
- 'Unpacking 3-probe Port Box' on *page 3-17*
- 'Moving into Position' on *page 3-21*
- 'Packing the Equipment' on *page 3-21*

Receiving the Venue 50

Overview

Improper handling during transportation may harm the equipment inside the package even if the package itself is undamaged.

When a new system arrives, check that any components are not damaged and are not in short supply. If shipping damage or shortage occurs, contact the address shown in Chapter 1.

NOTE: *Check the shipping container for special instructions. Verify that the container is intact. In some cases a secondary container may be used. If so, ask the carrier for unpacking instructions.*

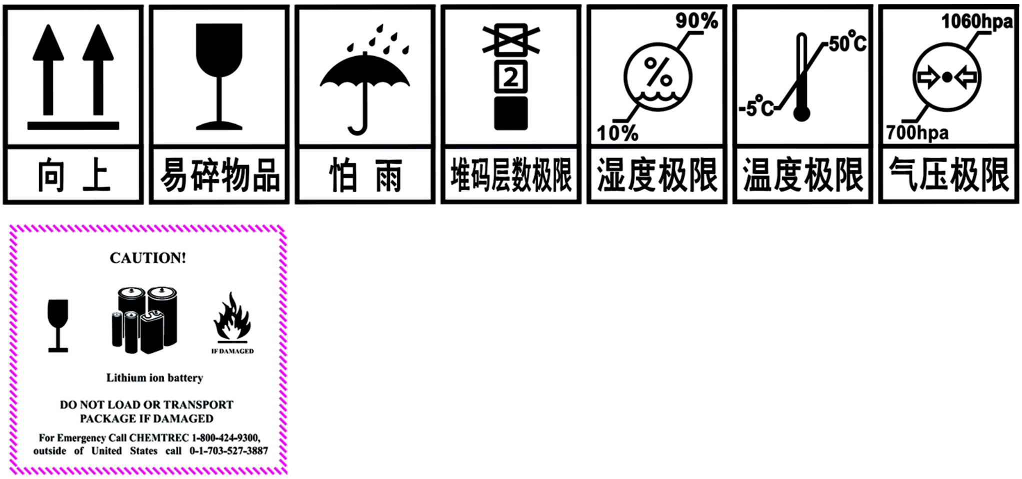

向 上
易碎物品
怕 雨
2
堆码层数极限
90%
%
10%
湿度极限
50°C
-5°C
温度极限
1060hpa
700hpa
气压极限
CAUTION!
IF DAMAGED
Lithium ion battery
DO NOT LOAD OR TRANSPORT
PACKAGE IF DAMAGED
For Emergency Call CHEMTREC 1-800-424-9300,
outside of United States call 0-1-703-527-3887

Figure 3-1. Labels on Package

Unpacking the Equipment

c ⚠ CAUTION	Please carefully unpack the system, and do not dispose the package of Venue 50, so that it can be reused for service.
c ⚠ CAUTION	Please keep the protective bag of Venue 50 in box, so that it can be used for shipping or transportation.

Unpacking the Venue 50

1. Cut the four PLASTIC BANDs
2. Cut the adhesive tape and open top covers of paper carton.

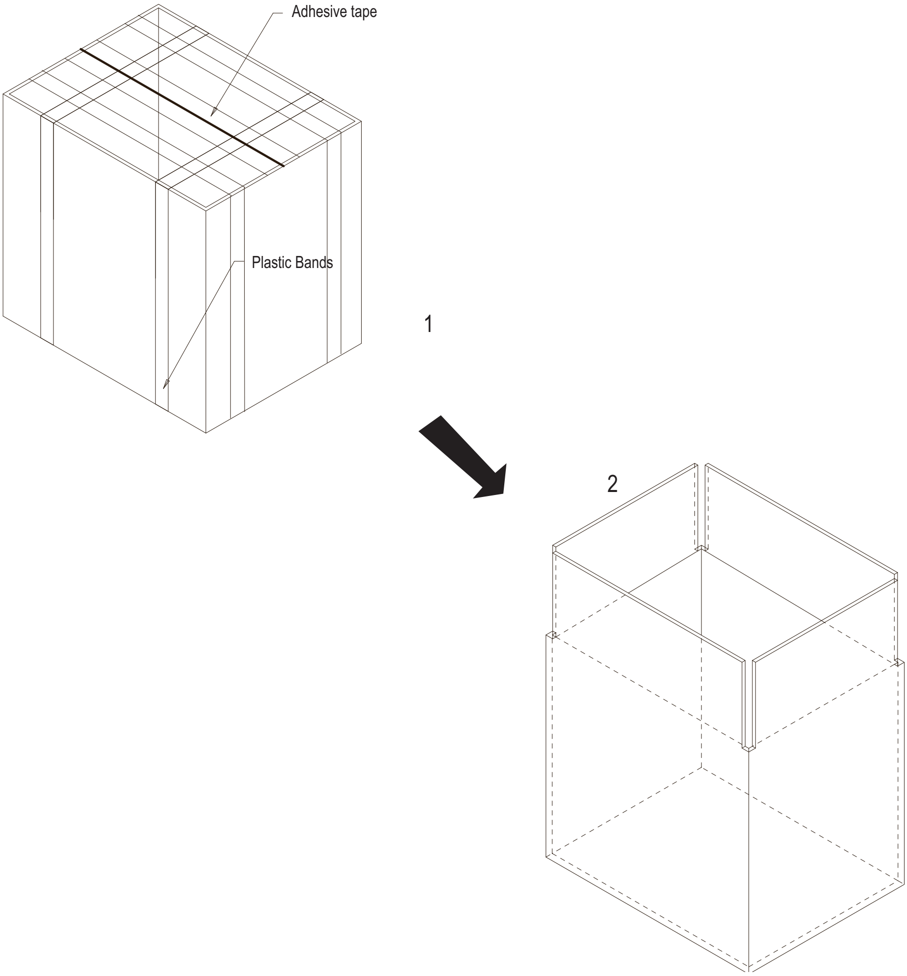

Adhesive tape
Plastic Bands
1
2

Figure 3-2. Open Top Covers of Paper Carton

Unpacking the Venue 50 (continued)

3. Take out the paper pad on the side. Refer to Figure 3-3 *on page 3-10*.
4. Take out the Accessories Package and Console Package. Refer to Figure 3-3 *on page 3-10*.

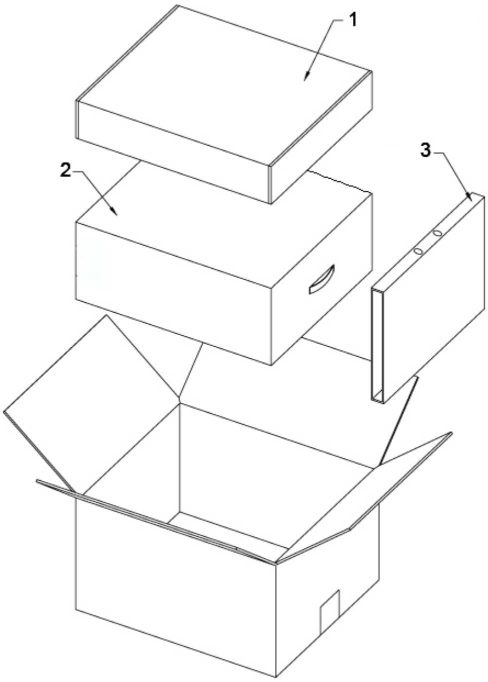


Figure 3-3. Unpacking the Venue 50

Table 3-1: Unpacking the Venue 50

Item	Description
1	Accessories Package
2	Console Package
3	Paper Pad

CAUTION

Do not lift the unit by the rubber band. Equipment damage may result.

Unpacking the Venue 50 (continued)

5. Open the Console Package, then remove the pad. Take out the battery package. Take out the console. Take off the protective bag and the PE bag. Refer to Figure 3-4 *on page 3-11*.

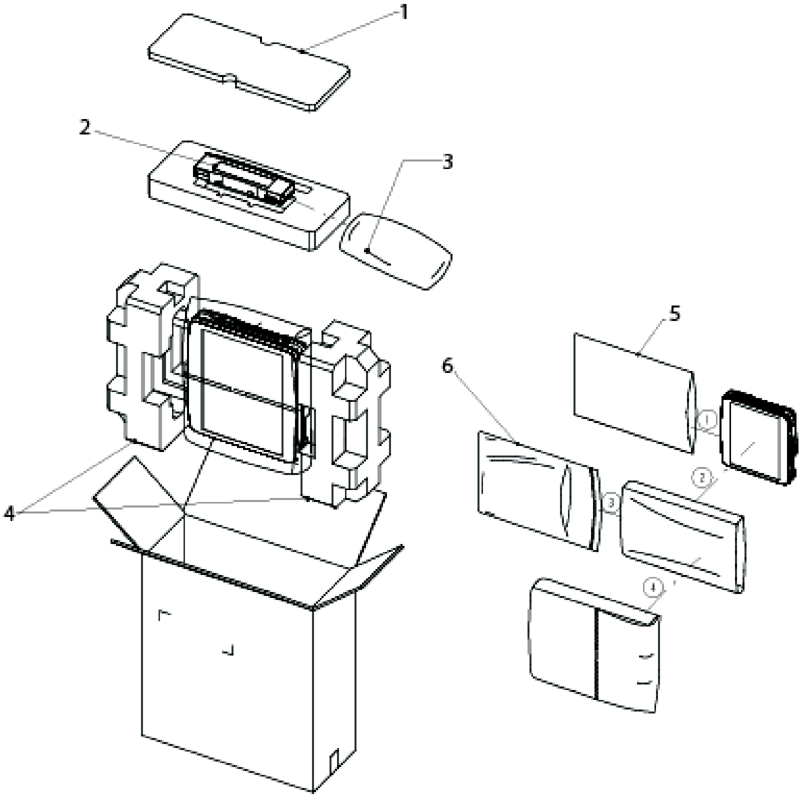


Figure 3-4. Taking out the system

Table 3-2: Taking out the system

Item	Description
1	Paper pad
2	Battery
3	Battery bag
4	Foam
5	PE bag
6	Venue 50 Protective bag

Unpacking the Venue 50 (continued)

6. Open the Accessories Package.

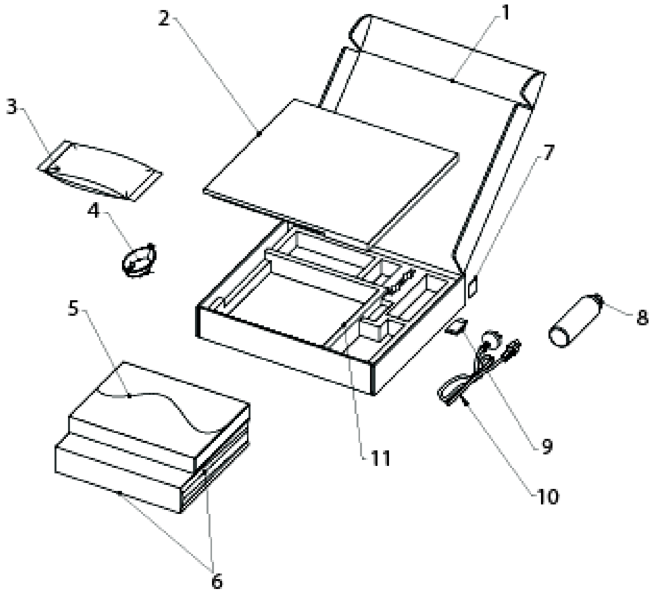


Figure 3-5. Opening Accessories Box

Table 3-3: Accessories Box

Item	Description
1	Venue 50 accessories carton
2	Cover pad
3	Biopsy kit (option)
4	Probe bracket for needle guide (option)
5	Manuals (option)
6	Manuals (standard)
7	Software SD Card - for re-loading software as needed
8	Aquasonic gel
9	SD Card adapter
10	Power Cable (option)
11	Foam

NOTE: *Make sure all the items in the checklist are in the Accessories box, contact GE Service if any problem.*

Unpacking Docking Station

1. Cut the four PLASTIC BANDS.
2. Cut the adhesive tape and open the top covers of the paper carton.

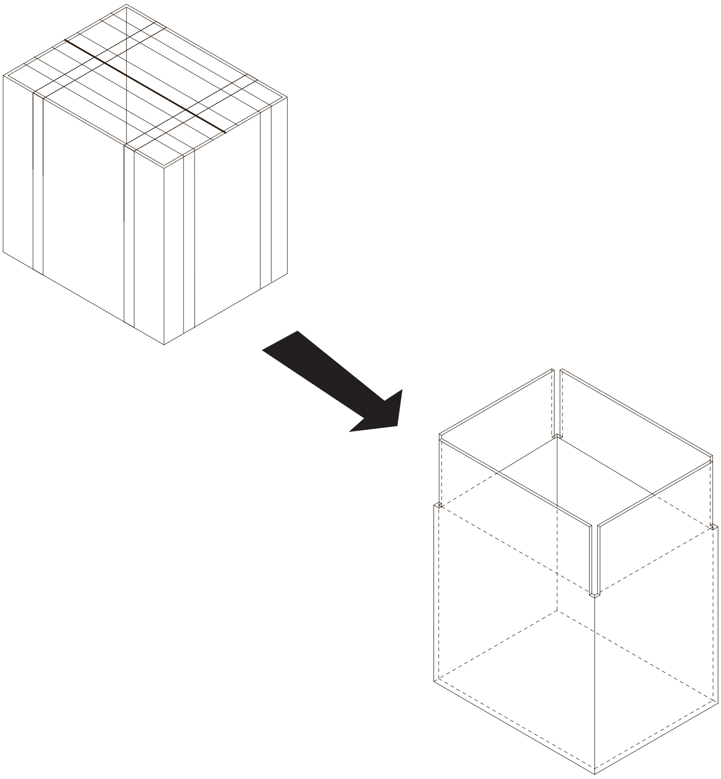


Figure 3-6. Open the top covers of the paper carton

Unpacking Docking Station (continued)

3. Remove top foam, take out the Docking Station Module and probe holders.
4. Take out the Base support module.

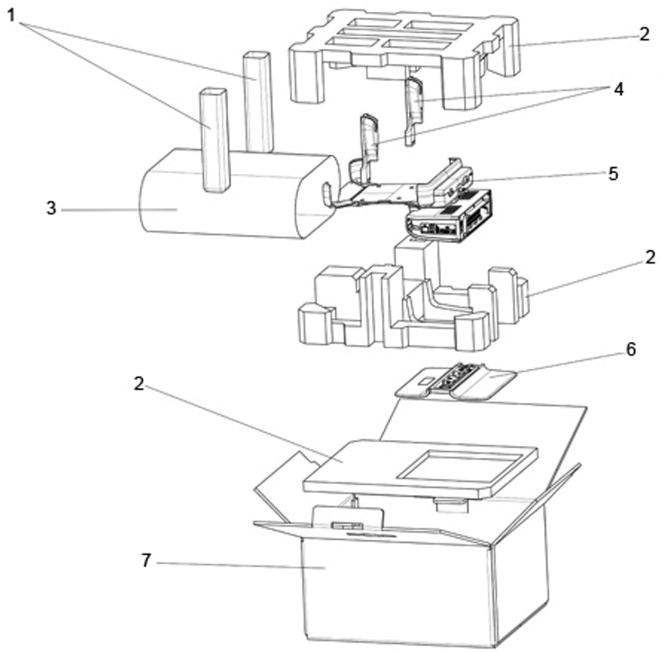


Figure 3-7. Unpacking Docking Station

Table 3-4: Docking Station

Item	Description
1	Probe holder bag
2	Foam
3	Docking Station bag
4	Probe holders
5	Docking Station module
6	Docking Station desk support module
7	Carton
8	Power cord

Unpacking Docking Station (continued)

5. Place the Docking Station Module on track of Base Support Module starting from the left, and slowly move it to the right till it clicks.

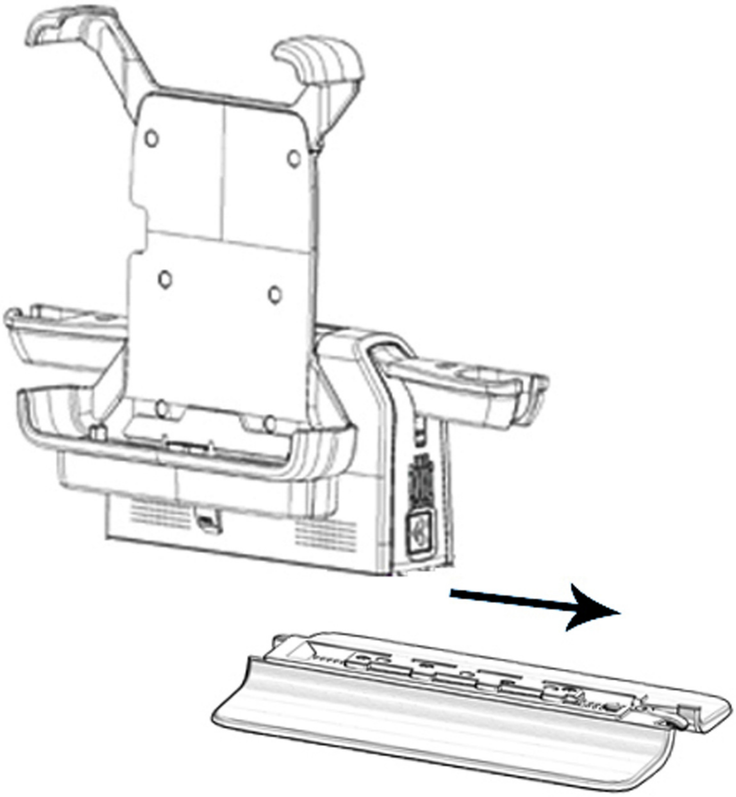


Figure 3-8. Install Docking Station

Unpacking Docking Cart

1. Cut the adhesive tape.
2. Open the top cover of paper carton.
3. Rotate the plastic locker counter clockwise and pull it out. Unlock all the four plastic lockers.
4. Remove the carton frames on both sides.
5. Remove all the foam and the ESD bag, cut the wire ties on the chassis. Take out the Docking Cart.

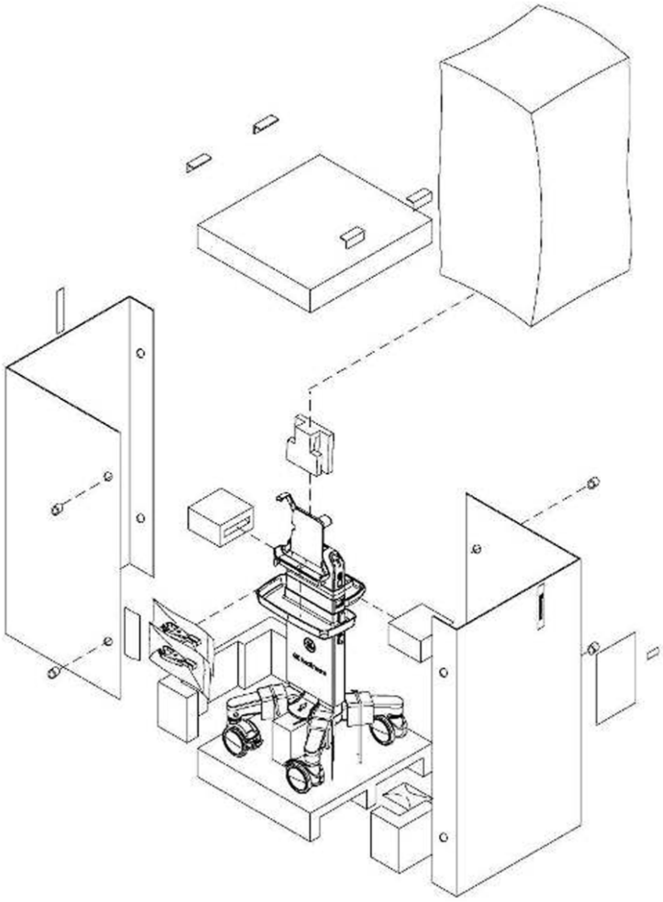


Figure 3-9. Unpack the Docking Cart

Unpacking 3-probe Port Box

1. Cut the four PLASTIC BANDs.
2. Cut the adhesive tape and open top covers of paper carton.

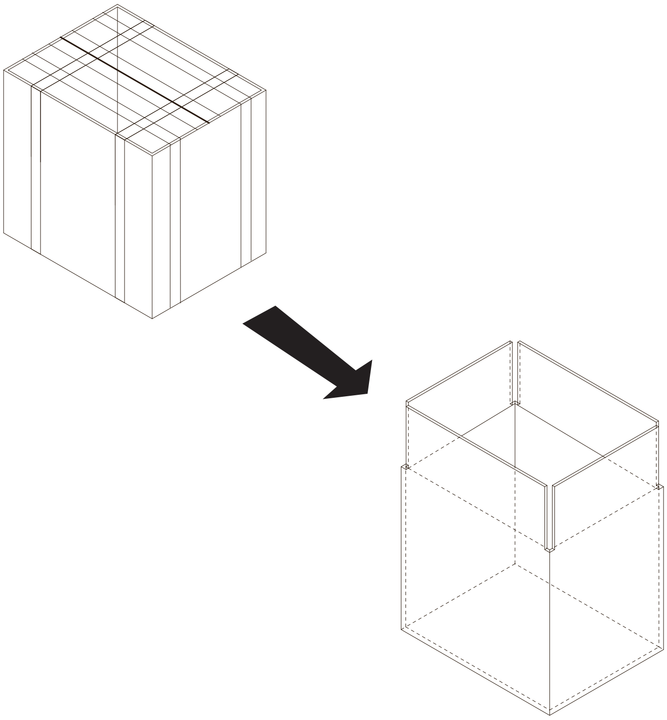


Figure 3-10. Open top covers of paper carton

Unpacking 3-probe Port Box (continued)

3. Remove the top foam, and take out the 3-probe Port Box, multi-probe holders, E8CS-SC probe holder and gel holder.
4. Continue to remove the foam, then take out the printer shelf and the drawer.

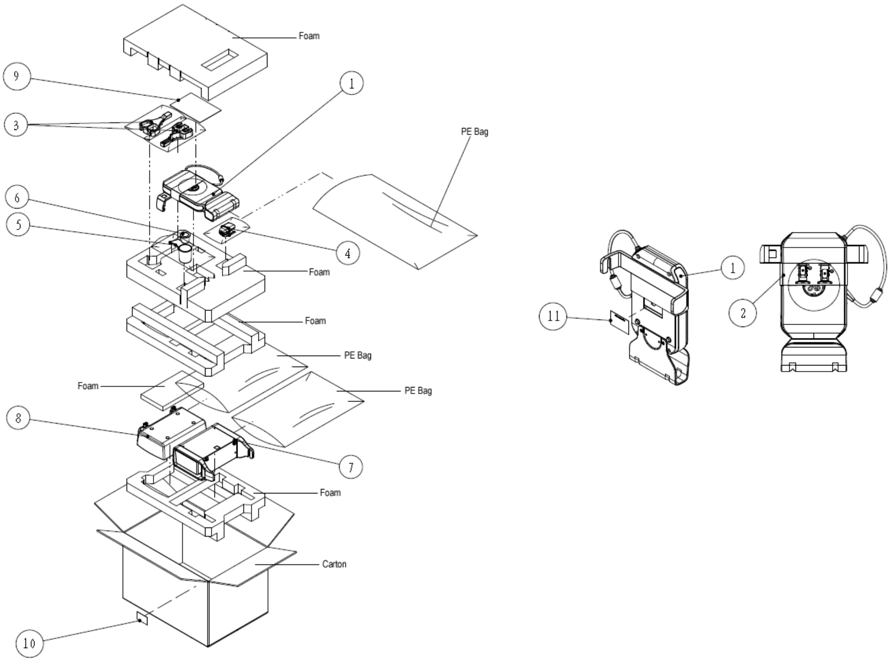


Figure 3-11. Unpacking the 3-probe Port Box

Table 3-5: 3-probe Port Box

Item	Description
1	3-probe Port Box
2	Installation instructions
3	Multi-probe holders
4	E8CS-SC probe holder
5	Gel holder
6	Gel holder
7	Printer shelf with drawer assy
8	On shelf basket assy
9	Venue 50 3-probe Port Box user instructions
10	Rating plate label for 3-probe Port Box option
11	Rating plate label for 3-probe Port Box

Unpacking Power Module Package

1. Cut the four PLASTIC BANDs.
2. Cut the adhesive tape and open top covers of paper carton.

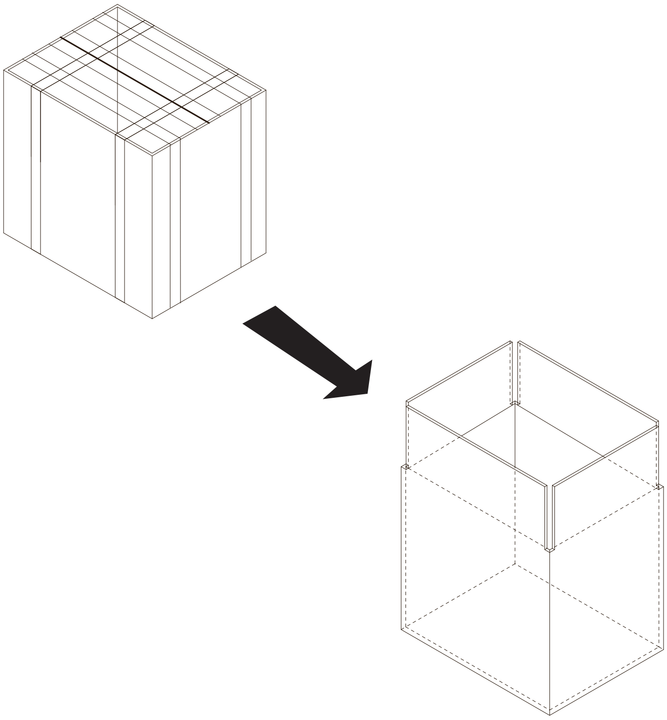


Figure 3-12. Open top covers of paper carton

Unpacking Power Module Package (continued)

3. Take out Power Module User Instruction.
4. Remove the top foam and take out the Power Module and Tray Assy.

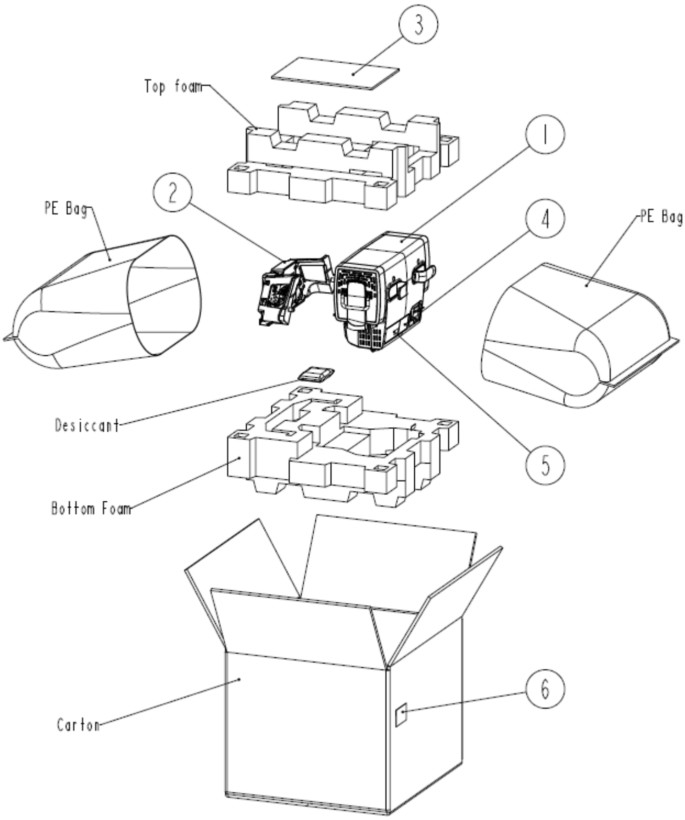

3
Top foam
1
2
PE Bag
4
PE Bag
Desiccant
5
Bottom Foam
6
Carton

Figure 3-13. Unpacking the 3-probe Port Box

Table 3-6: Power Module Box

Item	Description
1	Power Module
2	Tray Assy
3	Power Module User Instruction
4	Warning Label
5	Rating Plate label for Power Module
6	Rating Plate label for carton

Moving into Position

In general, a single adult can move the Venue 50. Before moving, store all loose parts in original accessory box or in back pack. Return probes to original box.

Packing the Equipment

Please pack Venue 50 in the reverse order of unpacking.

Preparing for Setup

Verify customer order

Compare items received by the customer to that which is listed on the delivery order. Report any items that are missing, back ordered, or damaged.

Physical inspection

Verify that the system arrived intact (visual inspection).

If the system has been damaged, please refer to 'Damage in Transportation' on *page i-11* in the beginning of this manual.

System Voltage Settings

- Verify that the scanner is set to the correct voltage. The Voltage settings for the Venue 50 Scanner is found on a label located on the AC adapter.
- 220-240VAC(China); 100-120VAC(USA/Japan); 220-240VAC(Europe, Latin America).

NOTE: *Check your local grid and confirm the voltage.*

WARNING *Connecting Docking Station/Cart to the wrong voltage level will most likely destroy the system.*

EMI protection

The Venue 50 has been designed to minimize the effects of Electro-Magnetic Interference (EMI). Many of the covers, shields, and screws are provided primarily to protect the system from image artifacts caused by this interference. For this reason, it is imperative that all covers and hardware are installed and secured before the unit is put into operation.

See 'EMI limitations' on *page 2-8* for more information about EMI protection.

Completing the setup

Purpose of this section

This section describes how to complete the installation of Venue 50.

Contents in this section

- 'System specifications' on *page 3-29*
- 'Electrical specifications' on *page 3-30*
- 'Connecting probes' on *page 3-25*
- 'Power On / Boot Up' on *page 3-28*
- 'Power shut down' on *page 3-28*

Mounting the System to Docking Station/Cart

Follow these steps to mount the system to docking station/cart:

1. Place the docking station and system on a stable surface.
2. Carefully pick up the system. Align the port on the Venue 50 with the docking port and carefully push into place.

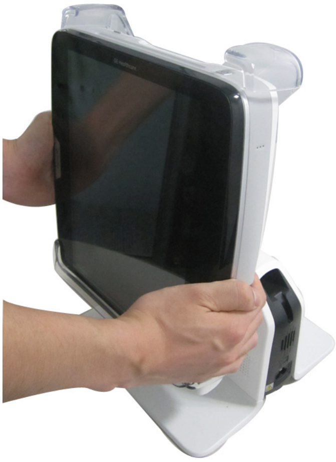


Figure 3-14. Mount to Docking Station/Cart

3. Press the locking lever down until it locks in place.

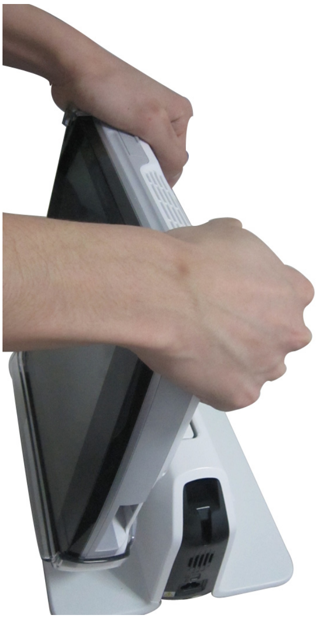


Figure 3-15. Press the locking lever

Connecting probes

Connect a probe

NOTE: It is not necessary to turn OFF power to connect or disconnect a probe.

CAUTION Do not allow the probe head to hang freely. Excessive impact to the probe will result in irreparable damage.

CAUTION To prevent probe connector pins damage, or PCB board damage, do not use excessive force when connecting the probes.

CAUTION Keep the probe cables away from the wheels.

Do not bend the probe cables.

Do not cross cables between probes.

Connect a probe (continued)

Follow these steps to connect a probe:

1. Place the probe's carrying case on a stable surface and open the case.
2. Carefully remove the probe and unwrap the probe cable.
3. DO NOT allow the probe head to hang free. Impact to the probe head could result in irreparable damage.
4. Before connecting the probe:
    a. Do a visual check of the probe pins and system sockets.
    b. Remove any dust or foam rests from the probe pins.
    c. Verify the probe and the probe cable for any visual damage.
5. Plug the probe connector into the probe port on right side of Venue 50 with the label facing the front.

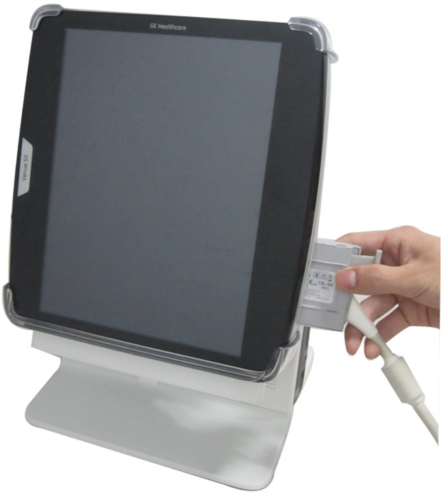


Figure 3-16. Connect a probe

6. Carefully position the probe cable so that it is free to move and is not resting on the floor.

Disconnect a probe

Follow these steps to disconnect a probe:

1. Press the locking lever to pop up the connector.

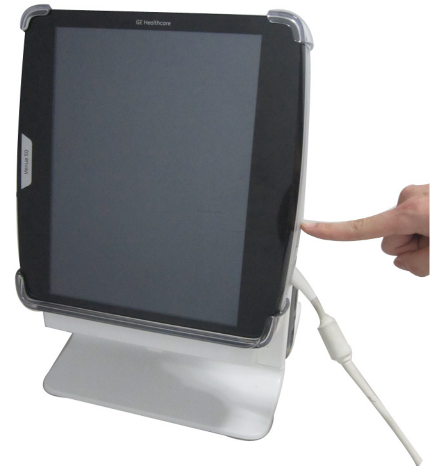


Figure 3-17. Pop up the locking lever

2. Pull the probe and connector straight out of the probe port.

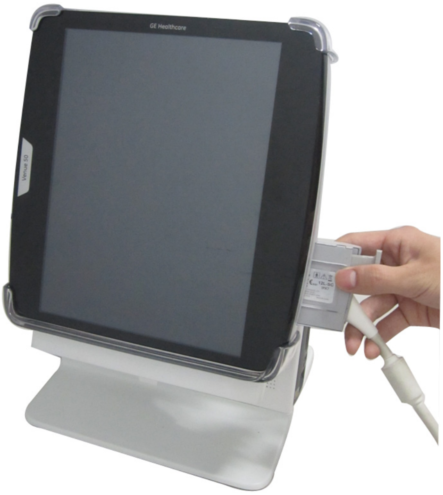


Figure 3-18. Disconnect a probe

NOTE: *Please do not drag the probe cable in order to avoid cable damage.*

Power On / Boot Up

For procedure, please refer to 'Power ON/Boot Up' on *page 4-4*.

Power shut down

For procedure, please refer to 'Power shut down' on *page 4-7*.

System Configuration

System specifications

System requirements verification

- Verify that the site meets the requirements listed in Chapter 2.

  (See: 'Facility needs' on *page 2-11*.)
- Verify that the specifications below don't conflict with any on-site conditions.

Physical dimensions

Table 3-7: Physical Dimensions of Venue 50

Height	Width	Depth	Unit
282	274	56	mm
11.1	10.8	2.2	inches

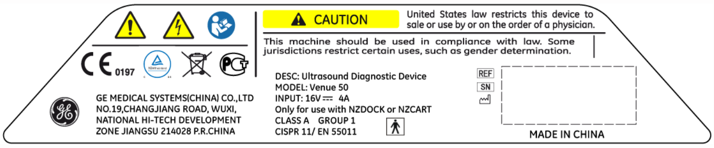
Electrical specifications

WARNING Connecting a Venue 50 to the wrong voltage level will most likely destroy it.

Verification of the system's voltage setting

Verify that the mains voltage specified for the Venue 50 is available on-site.

The voltage setting for the unit is found on the rating plate of the system.



United States law restricts this device to sale or use by or on the order of a physician.

This machine should be used in compliance with law. Some jurisdictions restrict certain uses, such as gender determination.

GE MEDICAL SYSTEMS(CHINA) CO.,LTD
NO.19,CHANGJIANG ROAD, WUXI,
NATIONAL HI-TECH DEVELOPMENT
ZONE JIANGSU 214028 P.R.CHINA

DESC: Ultrasound Diagnostic Device
MODEL: Venue 50
INPUT: 16V ⎓ 4A
Only for use with NZDOCK or NZCART
CLASS A GROUP 1
CISPR 11/ EN 55011

Figure 3-19. Rating Plate Label

Electrical specifications for Venue 50

In the table below, the electrical specifications for Venue 50 includes on board peripherals.

Table 3-8: Electrical specifications for Venue 50

Part Number	Description	Voltage	Tolerances	Power consumption	Frequency
5448430	Venue 50 Console	100-240 VAC	± 10%	1.6A max.	50/60Hz

Approved peripherals

Table 3-9: Approved peripherals

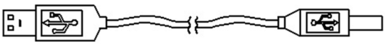
Device	Manufacturer	Model	Interface	Remark
B/W Printer	SONY	UP-D897,UP-D898	USB	
USB Memory Stick	SanDisk	SanDisk 4G	USB	
SD Card Reader	Transcend	TS-RDP5K	USB	
Wireless Network Card	Edimax	EW-7711UTn	USB	
Barcode Reader	Honeywell	Xenon 1900	USB	
Footswitch	Steute	MKF 21S/1S-MED HID GP26	USB	

Connecting Cables

WARNING

Equipment damage possibility. Be sure to use the following recommended connecting cables to connect recording devices and a network with Venue 50 console.

Table 3-10: List of Connecting Cables

Name	Part No.	Figure	NOTE
Printer USB Cable			For USB Printer

Peripheral/Accessories Connector Panel

Venue 50 peripherals and accessories can be properly connected using the side connector panel.

Docking Station/Cart Connector Panel

Located on the two sides of Docking Station/Cart are input and output connectors.

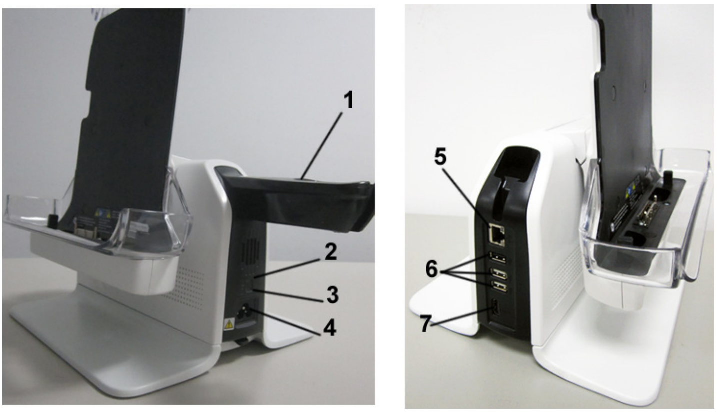


Figure 3-20. Docking Station/Cart Connector Panel

1. Probe Holder (Holder on each side)
2. AC Power Indicator
3. Battery Charging Indicator
4. AC Power Input Socket
5. LAN Port
6. 3 USB Ports (for peripherals connection)
7. HDMI Port (for external monitor connection)

NOTE: Without AC power, only the first USB port (from top to bottom) is available.

NOTE: Without AC power, LAN port, the second and third USB ports and HDMI port are not available.

NOTE: Each outer (case) ground line of peripheral/accessory connectors are protectively grounded. Signal ground lines are not isolated.

Pin Assignment for each connector

Pin Assignment of USB

Table 3-11: Pin Assignment of USB

Pin No.	Signal	Pin No.	Signal
1	+5VDC	3	DATA+
2	DATA-	4	GND

Pin Assignment of External HDMI

Table 3-12: Pin Assignment of HDMI

Pin No.	Signal	Pin No.	Signal
1	TMDS Data2+	11	TMDS Clock Shield
2	TMDS Data2 Shield	12	TMDS Clock-
3	TMDS Data2-	13	CEC
4	TMDS Data1+	14	Reserved (N.C. on device)
5	TMDS Data1 Shield	15	SCL
6	TMDS Data1-	16	SDA
7	TMDS Data0+	17	DDC/CEC Ground
8	TMDS Data0 Shield	18	+5V Power
9	TMDS Data0-	19	Hot Plug Detect
10	TMDS Clock+		

Peripherals Connection

1. Insert SD Card to the system.
    a. Pull the SD Socket cover towards the back of the Venue 50 to make it easy to open.

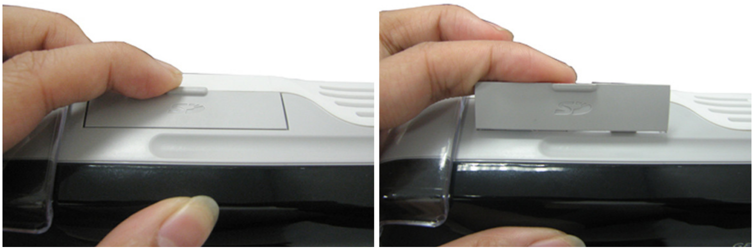


Figure 3-21. Open SD Card Socket cover

    b. Insert the SD Card into the SD Card Socket on top of the system with the labeled side facing the front of the Venue 50.

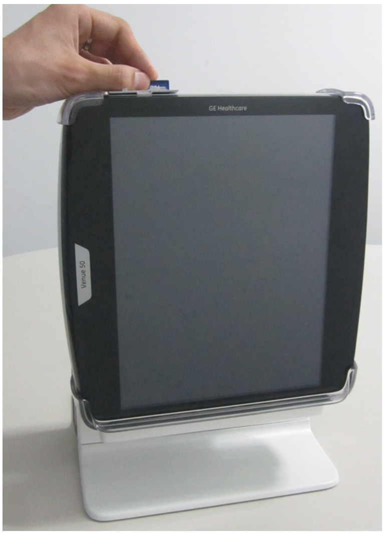


Figure 3-22. Insert SD Card to the system

Peripherals Connection (continued)

2. Connect B/W printer to the system. B/W Printer can be properly connected to the USB port of the Docking Station/ Cart.

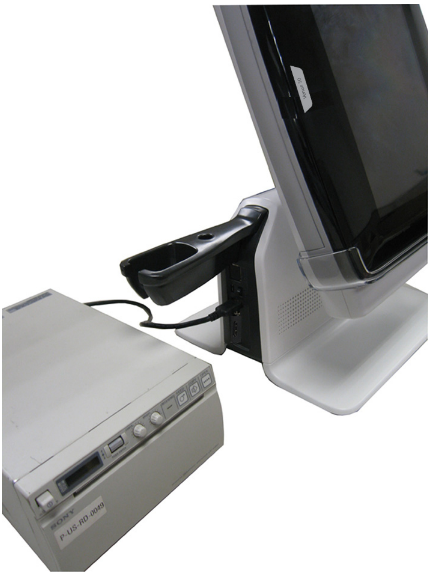


Figure 3-23. B/W Printer Connection

3. Connect USB Memory stick to the system. USB Memory stick can be properly connected to the USB port on the Docking Station/Cart.

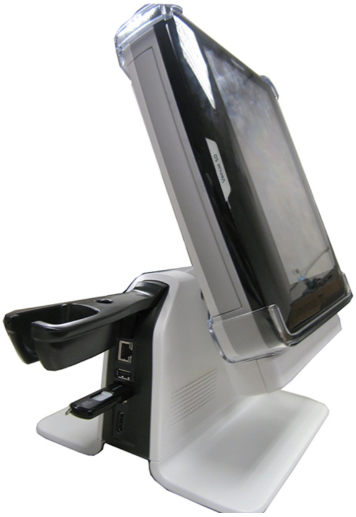


Figure 3-24. USB Memory Stick Connection

Peripherals Connection (continued)

4. Connect external LCD to the HDMI port of the Docking Station/Cart.

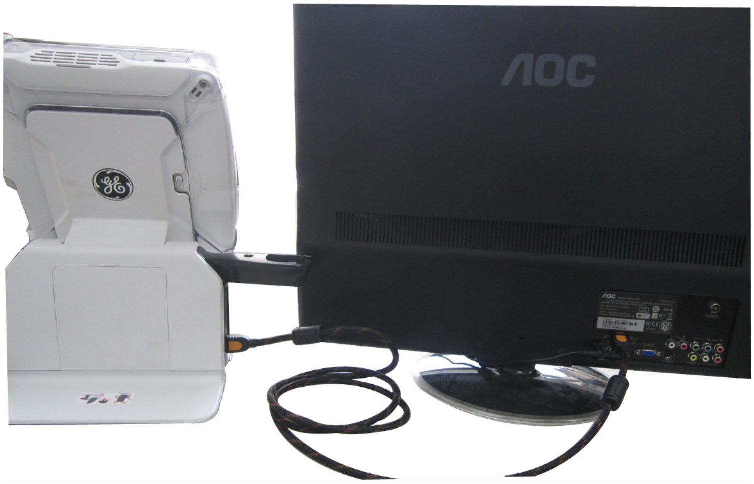


Figure 3-25. External LCD Connection

5. Connect the Wireless Network Card to the USB port of the Docking Station/Cart.

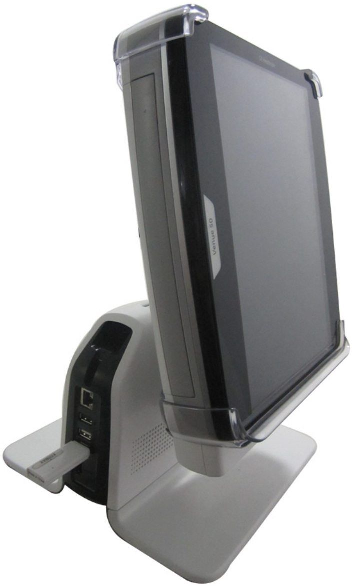


Figure 3-26. Wireless Network Card Connection

Peripherals Connection (continued)

6. Connect the footswitch to the USB port of the Docking Station/Cart.

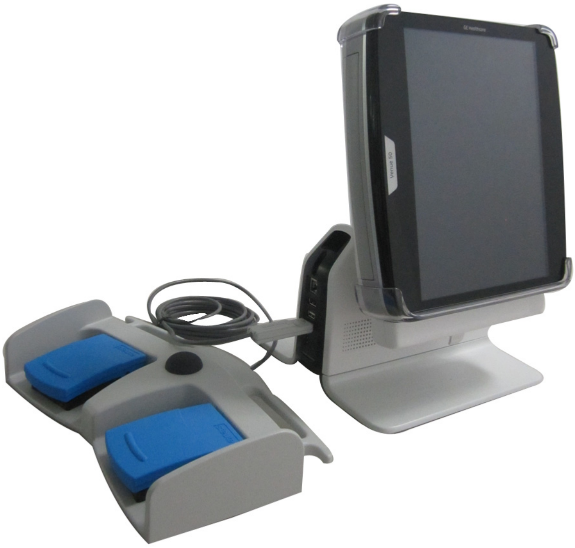


Figure 3-27. Footswitch Connection

7. Connect the barcode reader to the USB port of the Docking Station/Cart.

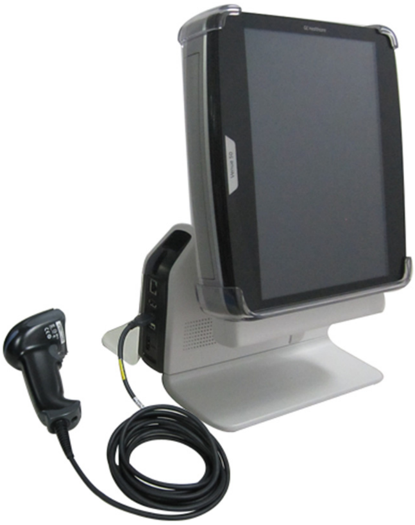


Figure 3-28. Barcode Reader Connection

Connect 3-probe Port to Docking Cart

1. Remove any storage trays from the front of the Docking Cart. Mount the 3-probe Port on the Docking Cart.

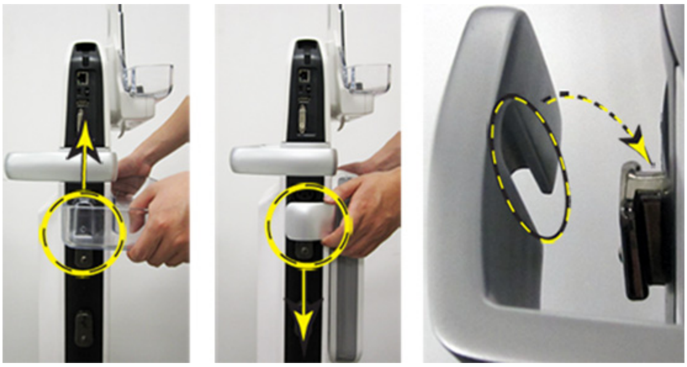


Figure 3-29. 3-probe Port Connection

NOTE: *Be sure to fully inset the grooves into the top side slides.*

NOTE: *The 3-probe Port shall be mounted to the front of the Docking Cart.*

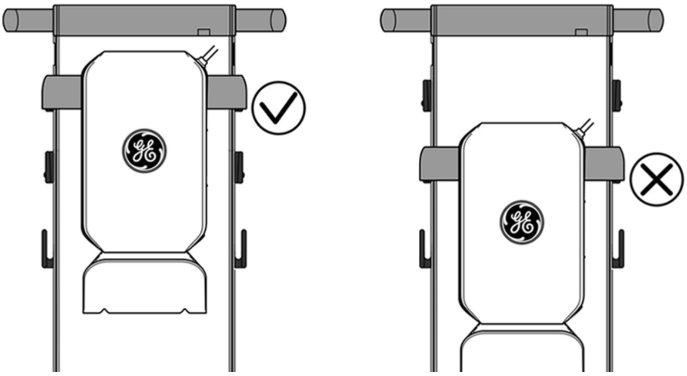


Figure 3-30. 3-probe Port Position

Connect 3-probe Port to Docking Cart (continued)

2. Connect the 3-probe Port to the Venue 50.

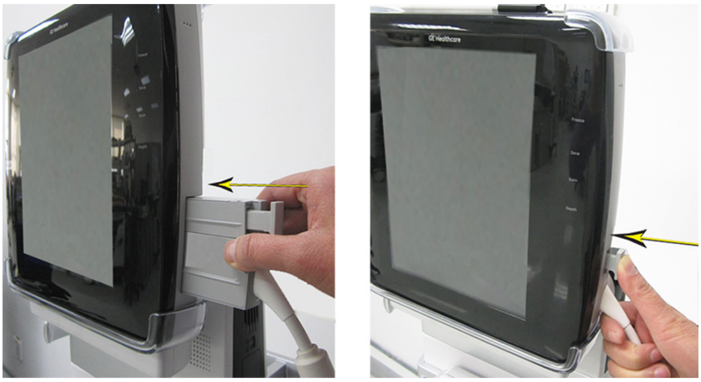


Figure 3-31. 3-probe Port Connection

3. Press the cable hook and put the cable into the hook.

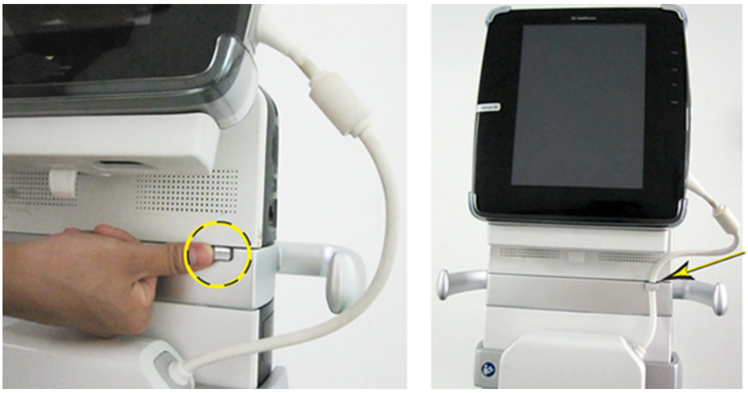


Figure 3-32. Cable Hook

NOTE: *Pull the cable hook if it does not pop out completely.*

4. Connect the probe holders to the Docking Cart.

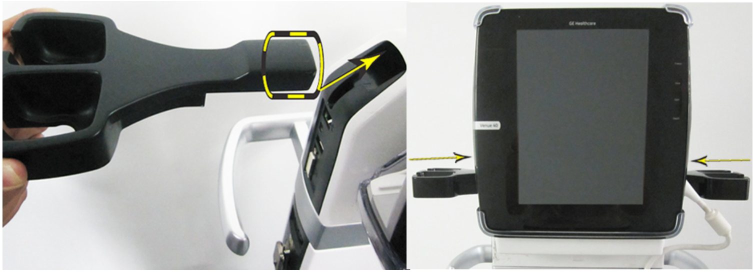


Figure 3-33. Probe Holders Connection

Connect 3-probe Port to Docking Cart (continued)

5. Connect the E8CS-SC probe holder and gel holder to the probe holders.

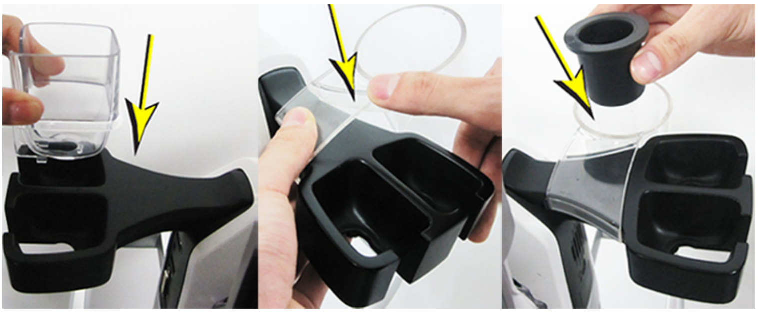


Figure 3-34. Probe Holder Connection

6. Connect the probes to the 3-probe port.

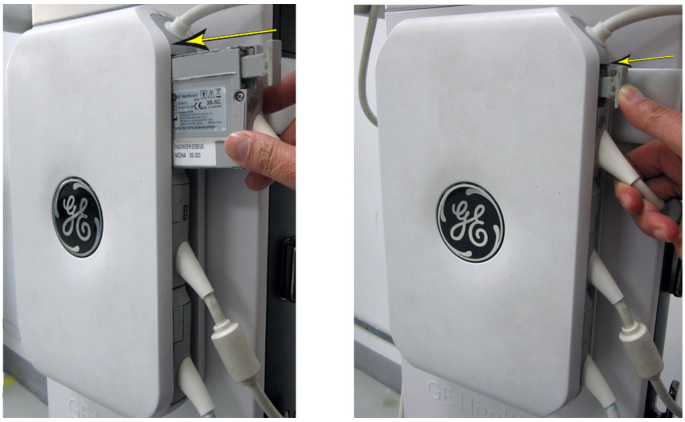


Figure 3-35. Probe Connection

Connect 3-probe Port to Docking Cart (continued)

7. Mount the printer shelf to the Docking Cart.

   Attach the basket to the printer shelf and mount the printer shelf to the Docking Cart.

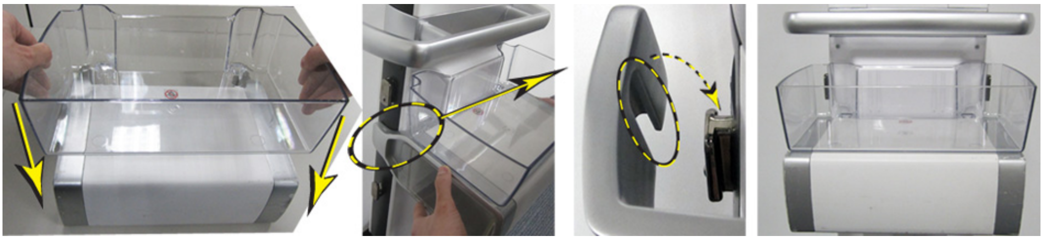


Figure 3-36. Printer Shelf Connection

NOTE: Be sure to fully inset the grooves into the second side slides.

NOTE: The printer shelf shall be mounted to the back of the Docking Cart.

NOTE: The console in the figures above is only for your reference. Please connect Venue 3-probe port to Venue 50.

Connect 3-probe Port to Docking Cart (continued)

8. Choose probes.

   Power on the system and press **Home** to choose the appropriate probe.

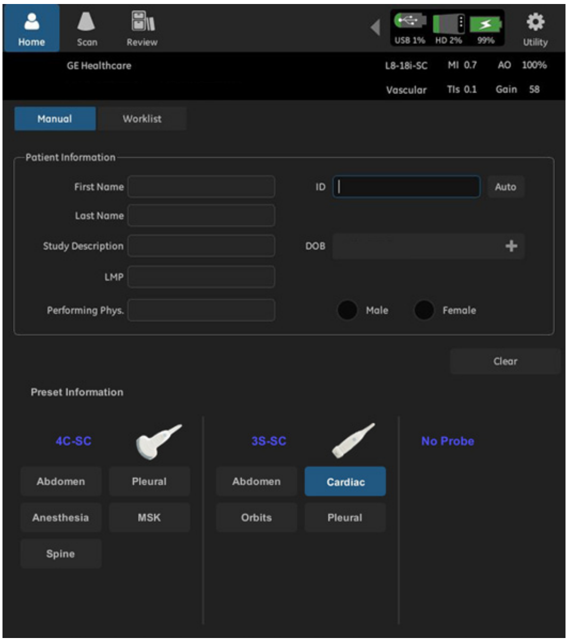

Home
Scan
Review
USB 1%
HD 2%
99%
Utility
GE Healthcare
L8-18i-SC
MI 0.7
AO 100%
Vascular
TIs 0.1
Gain 58
Manual
Worklist
Patient Information
First Name
Last Name
Study Description
LMP
Performing Phys.
ID
Auto
DOB
Male
Female
Clear
Preset Information
4C-SC
Abdomen
Pleural
Anesthesia
MSK
Spine
3S-SC
Abdomen
Cardiac
Orbits
Pleural
No Probe

Figure 3-37. Choose Probes

NOTE: *The order of the probes shown on the screen is the same as that of the probes connected to the 3-probe Port.*

"**No Probe"** may display on the screen due to the following:

- No probe is connected to the relevant port.
- The probe may not be fully inserted into the slot. Recheck the connection to insure proper connection.
- The probe is connected to the relevant port, but the software option key for this probe has not been activated. Please contact your local GE representative and place an order for the additional software option. See *"Add new software option keys"* in Basic User Manual for more information

Connect Power Module to Docking Cart

Preparation

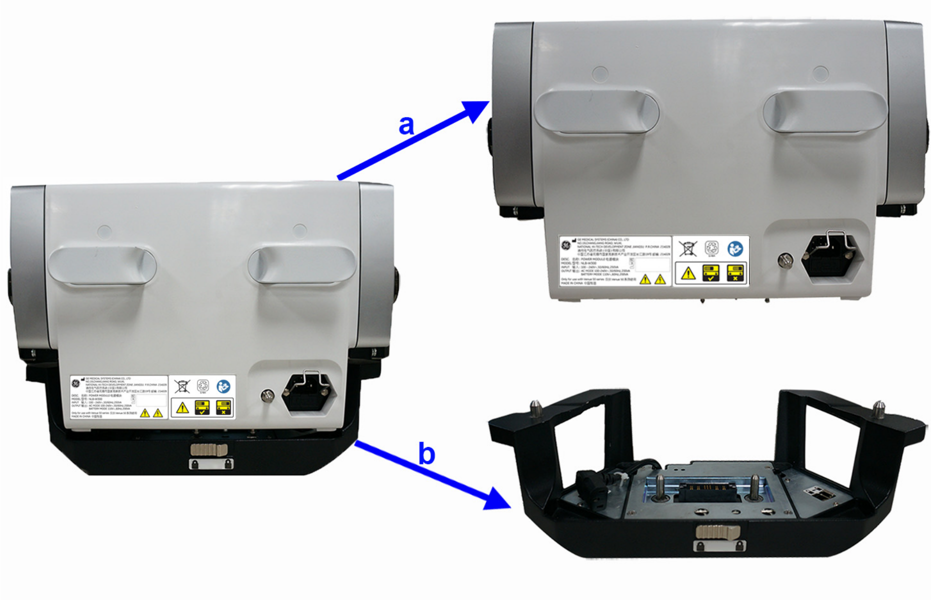
Shutdown Venue 50 and disconnect the power cord from the docking cart.

Overview

The whole Power Module kit includes 2 parts:

a. Power Module

b. Tray Assy

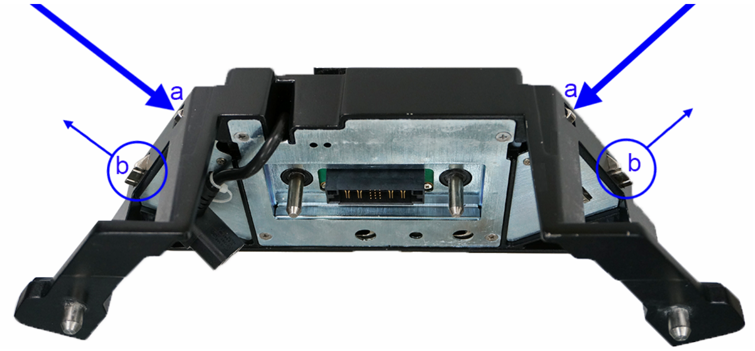


CAUTION **It is not permitted to disassemble the Power Module by operators.**

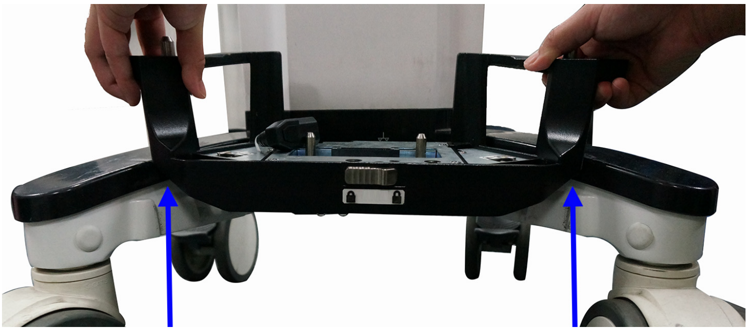
Explosion Hazard **The Power Module shall be kept away from fire. There is risk of explosion if it is used in an explosive atmosphere.**

Mounting Procedure

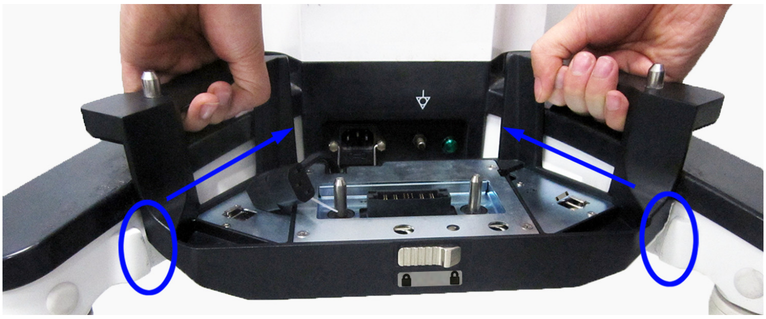
1. Press the reset tippers to ensure that both hooks pop out.
    a. Reset tippers
    b. Hooks



2. Lift the Tray Assy to ensure the bottom of it and the base chasis are at the same height.

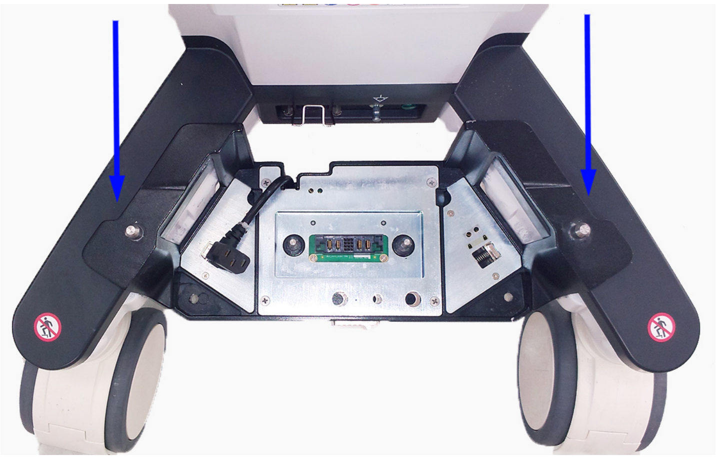


3. Push the Tray Assy inward along the edge of the base chasis. Ensure both edges of the Tray Assy are inside of the guide slides of the base chasis.



Mounting Procedure (continued)

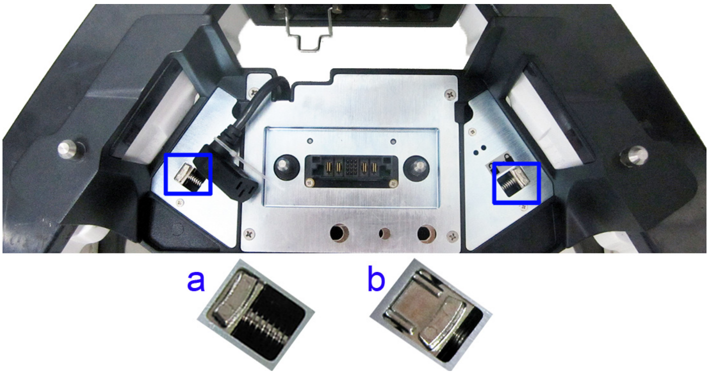
4. Push it down and fix it to the base chasis.



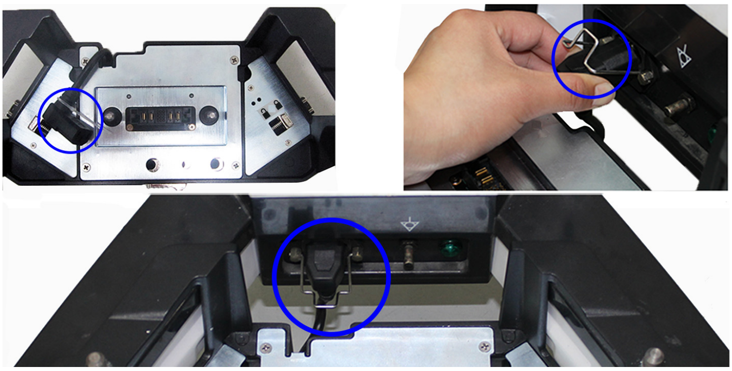
NOTE: *After the Tray Assy is installed successfully, both hooks should be at the lock position.*

a. Lock Position

b. Unlock Position

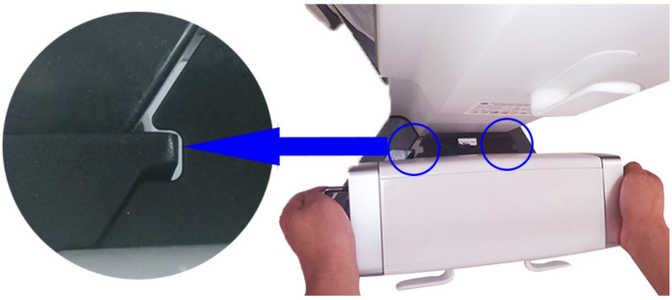


5. Disconnect the cable tie, connect the power cord to the Docking Cart, then position the retaining clip over the power cord.



Mounting Procedure (continued)

6. Install the Power Module to the Tray Assy vertically and ensure both ribs are located in the slots.



NOTE: After installed successfully, the lock button should be at the lock position. If the lock button moves to the unlock position while the Venue 50 is in use, ***the Power Module needs to be re-mounted***

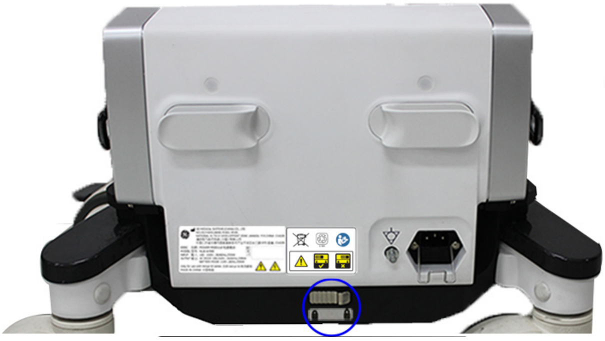


Table 3-13: Label/Icon Explanations

Label/Icon	Explanations
✓	If the lock button is at the left side, it means it is at the lock position.
✕	If the lock button is at the right side, it means it is at the unlock position.

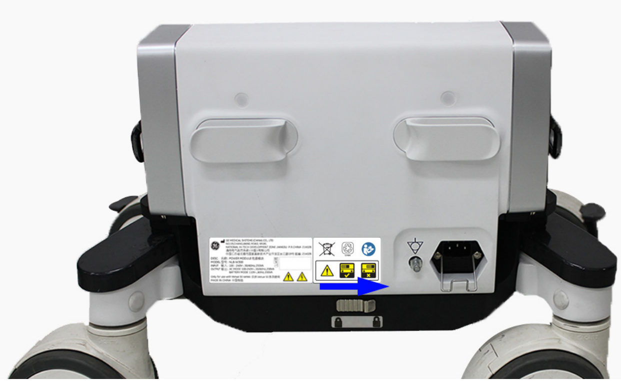
Disconnect Power Module from Docking Cart

Preparation

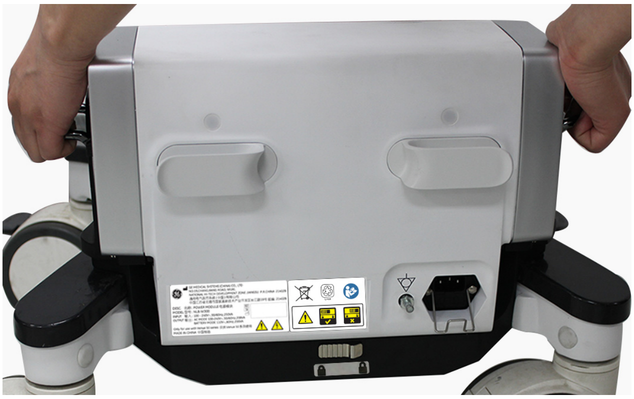
Shutdown Venue 50 and Power Module, disconnect the power cord from Power Module.

Dismounting Procedure

1. Slide the lock button to the unlock position.

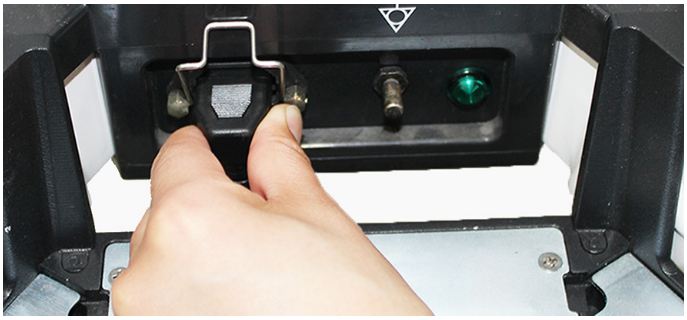


2. Lift up the Power Module vertically.

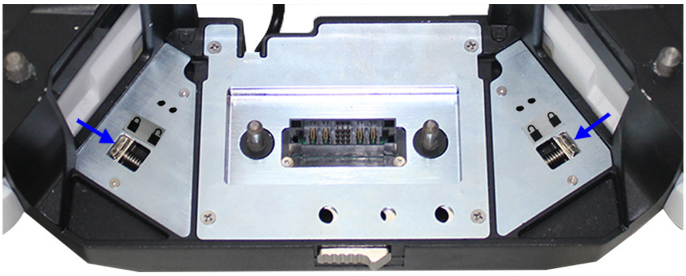


Dismounting Procedure (continued)

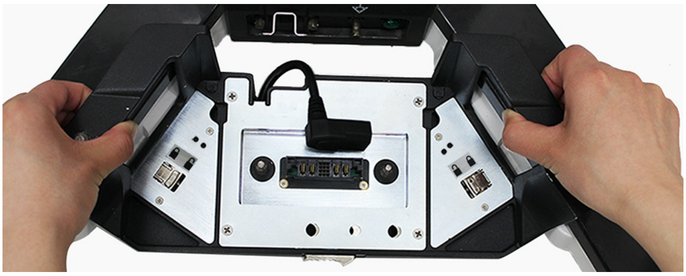
3. Position the retaining clip up the power cord and disconnect the power cord.



4. Slide both hooks to unlock position.



5. Lift up the Tray Assy from the base chassis of Docking Cart vertically.



Power Module Usage

Power Module Charging

Connect the Power Module to an active AC outlet with the power cord of the Docking Cart.

CAUTION **If you plan on storing the Power Module for an extended period, fully charge it once every three months.**

Power Module Storage

Press and hold the **Power On/Off** switch for three seconds to turn off the Power Module, and it will be ready for storage.

NOTE: *To avoid Power Module drain, all connected equipment should be turned off and disconnected from the Power Module after use or during Power Module storage.*

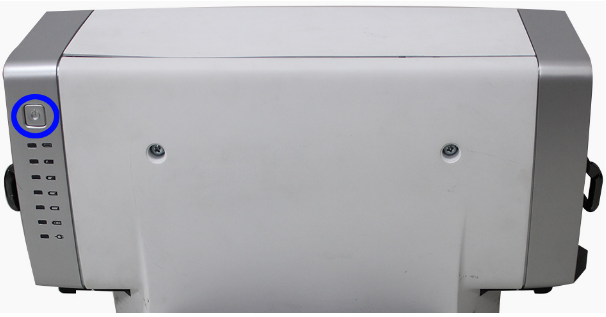
CAUTION **If you leave the Power Module discharged for three months or more, its lifecycle may be shortened.**

Power on /off the Power Module

Press **Power On /Off** switch for one second to turn on the Power Module. LED2 will turn green.

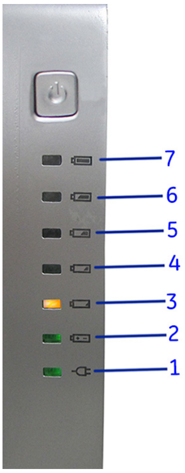
Press **Power On /Off** switch for three seconds or more to turn off the Power Module. LED2 will be off.

NOTE: *If the Power Module is not turned off after three seconds or more, try again to press **Power On/Off** switch to turn it off.*



NOTE: *Press **Power On /Off** switch to turn it on even when an active AC outlet is connected. Otherwise the docking cart, console and peripherals can not get electricity.*

LED Indicators



LED indicators show different status of the Power Module as below:

Table 3-14: LED Indication

LED	Color	Indication
LED1	green	on charging
LED2	green	discharging
LED3	flashing	remaining capacity<10%
	yellow	remaining capacity>=10%
LED4	green	remaining capacity>=20%
LED5	green	remaining capacity>=40%
LED6	green	remaining capacity>=60%
LED7	green	remaining capacity>=80%

NOTE: *When the Power Module is fully charged, all lights are off except when it is discharging. In this case, only LED2 will be green.*

CAUTION **When LED3 is flashing, connect the Power Module with a live AC outlet and record the data at once. Otherwise the data will be missing when the system powers off suddenly**

Matrix of Peripheral Working Power Load

NOTE: *The working power load is the sum of all the connected peripherals and the console. The console power consumption is 40W.*

NOTE: *When the B/W USB Printer stands by, the power load is 10W.*

NOTE: *The maximum rated power load of the Power Module is 200W. Please do not overload.*

Table 3-15: Working Power Load of Printer

Device	B/W USB Printer
Model	UP-D897,UP-D898
Manufacturer	SONY
Working Power Load (W)	101

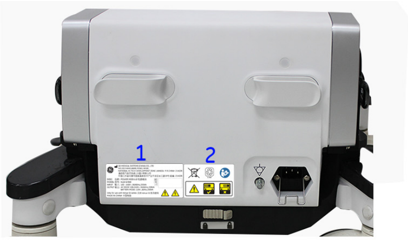
NOTE: *Do not remove the console battery from Venue 50 system. If the power, with the operating voltage 110v or below, goes off, the Power Module may fail to function.*

NOTE: *Please avoid dropping the Power Module.*

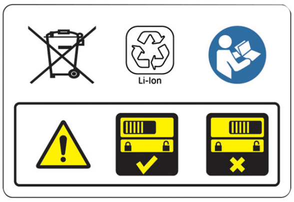
NOTE: *If the Power Module is splashed with water or other liquid, it must be shut down and cleaned immediately.*

NOTE: *Ensure that no condensate is on the Power Module before turning it on. If there is condensate, please put the Power Module in a dry and ventilated place. It is not allowed to turn on the Power Module until the condensate completely disappears.*

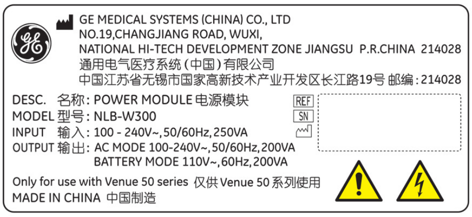
Power Module Rating Plate/Warning Lable



2



1


GE MEDICAL SYSTEMS (CHINA) CO., LTD
NO.19,CHANGJIANG ROAD, WUXI,
NATIONAL HI-TECH DEVELOPMENT ZONE JIANGSU P.R.CHINA 214028
通用电气医疗系统(中国)有限公司
中国江苏省无锡市国家高新技术产业开发区长江路19号 邮编:214028

DESC. 名称: POWER MODULE 电源模块
MODEL 型号: NLB-W300
INPUT 输入: 100 - 240V~,50/60Hz,250VA
OUTPUT 输出: AC MODE 100-240V~,50/60Hz,200VA
BATTERY MODE 110V~,60Hz,200VA

REF
SN

Only for use with Venue 50 series 仅供Venue 50系列使用
MADE IN CHINA 中国制造

1. Rating Plate/Warning Label Explanations

Table 3-16: Label/Icon Explanations

Label/Icon	Explanations
AC MODE	The power is supplied by the Alternating Current (AC)
BATTERY MODE	The power is supplied by the battery when the Alternating Current (AC) is off.

2. If the lock button moves to the unlock position while the Venue 50 is in use, the Power Module needs to be re-mounted.

For the explanation of other labels/Icons on Rating Plate/Label, please refer to the latest revision of Venue 50 Basic User Manual.

NOTE: *Please refer to the operation manual of each peripheral for information needed by the user to operate the system safely.*

Available probes

For different software versions, please see in specification in the Venue 50 Basic User Manual for probes and intended uses.

Table 3-17: List of Probes for Venue 50

Probe Name	Material of Headshell	TYPE	Catalog Number	Part Number
3S-SC	VALOX	SECTOR	H40452LD	5499959 is to replace 5309652
12L-SC	VALOX	LINEAR	H40452LB	5499958 is to replace 5304023
4C-SC	VALOX	CONVEX	H40452LM	5499960 is to replace 5337604
L8-18i-SC	VALOX	LINEAR	H40452LZ	5499595 is to replace 5384872
E8CS-SC	VALOX	CONVEX	H40462LL	5499966 is to replace 5413888
10C-SC	VALOX	CONVEX	H48862LZ	5456227

Software Options configuration

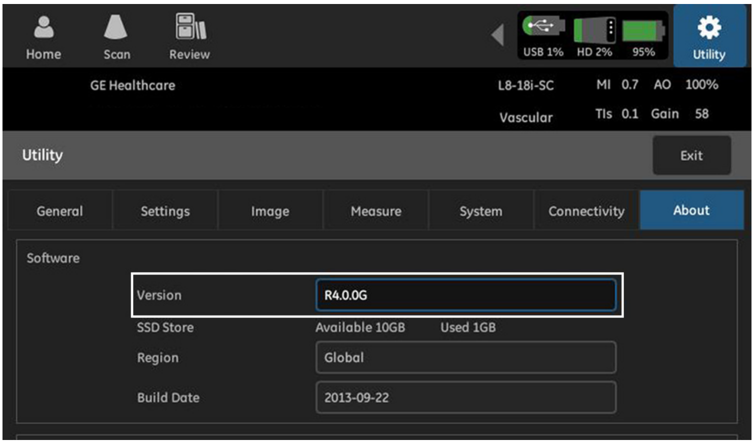
Software Option installation introduction

Refer to the Venue 50 *Basic User Manual*, Chapter 4, ‘Customizing Your System’ for information on configuring items like Hospital, Department, Language, Date and Time.

For information on configuring Software Options, please refer to the Venue 50 Basic User Manual, Chapter 4, Customizing Your System.

Software version check-out

1. Power on Venue 50 scanner and wait until system booting to main screen.
2. Press **Utility**, then select **About**.
3. Check whether the software version is the right one for use.


Home
Scan
Review
USB 1%
HD 2%
95%
Utility
GE Healthcare
L8-18i-SC
Vascular
MI 0.7
AO 100%
TIs 0.1
Gain 58
Utility
Exit
General
Settings
Image
Measure
System
Connectivity
About
Software

Version R4.0.0G
SSD Store Available 10GB Used 1GB
Region Global
Build Date 2013-09-22

Figure 3-38. Software Version

Paperwork after setup

NOTE: *During and after setup, the documentation (i.e. User Manuals, Installation Manuals, etc.) for the Venue 50 and the peripherals must be kept as part of the original Ultrasound system documentation. This ensures that all relevant safety and user information is available during the operation and service of the complete Ultrasound system.*

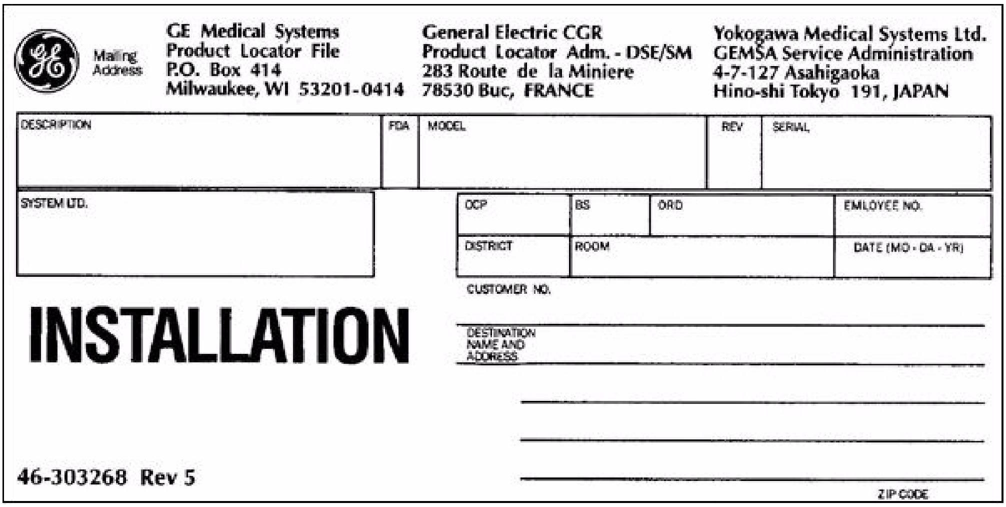
User's Manual(s)

Check that the correct User Manual(s) for the system and software revision, is included with the installation. Specific language versions of the User Manual may also be available. Check with your GE Sales Representative for availability.

For a complete list of User's Manuals for Venue 50, refer to Chapter 9 in this manual.

Product Locator Installation Card

NOTE: *The Product Locator Installation Card shown may not be the same as the provided Product Locator card.*



Mailing Address

GE Medical Systems
Product Locator File
P.O. Box 414
Milwaukee, WI 53201-0414

General Electric CGR
Product Locator Adm. - DSE/SM
283 Route de la Miniere
78530 Buc, FRANCE

Yokogawa Medical Systems Ltd.
GEMSA Service Administration
4-7-127 Asahigaoka
Hino-shi Tokyo 191, JAPAN

DESCRIPTION
FDA
MODEL
REV
SERIAL
SYSTEM I.D.
OCP
BS
ORD
EMLOYEE NO.
DISTRICT
ROOM
DATE (MO - DA - YR)
CUSTOMER NO.
DESTINATION NAME AND ADDRESS
ZIP CODE

INSTALLATION

46-303268 Rev 5

Figure 3-39. Product Locator Installation Card (Example)

Chapter 4

General Procedures and Functional Checks

This chapter provides procedures for quickly checking major functions of the Venue 50 and diagnostics instructions using the built-in service software and power supply adjustments.

Overview

Contents in this chapter

- ‘Overview’ on *page 4-2*
- ‘General procedures’ on *page 4-3*
- ‘Functional checks’ on *page 4-8*

Equipment required

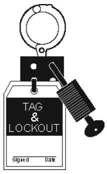
To perform these tests, you'll need any of the sector, linear, or convex transducers. (Normally you should check all the transducers used on the system).

General procedures

WARNING

Energy Control and Power Lockout for Venue 50.

When servicing parts of the Ultrasound system where there is exposure to voltage greater than 30 volts:



1. Follow LOCK OUT/TAG OUT procedures.
2. Turn off the breaker.
3. Unplug the Ultrasound system.
4. Maintain control of the Ultrasound system power plug.
5. Wait for at least 30 seconds for capacitors to discharge as there are no test points to verify isolation.
6. Remove/disconnect the battery, if present.

Ultrasound System components may be energized.

Overview

Some procedures are used more often than other. The intention with this section is to keep the most used procedures in one place.

Power ON/Boot Up

Warnings

d ⚠ DANGER	ALWAYS CONNECT THE ULTRASOUND SYSTEM TO A FIXED POWER SOCKET WHICH HAS THE PROTECTIVE GROUNDING CONNECTOR.
d ⚠ DANGER	NEVER USE A THREE-TO-TWO PRONG ADAPTER; THIS DEFEATS THE SAFETY GROUND.
d ⚠ DANGER	ENSURE THAT THE POWER CORD AND PLUG ARE INTACT AND THAT THE POWER PLUG IS THE PROPER HOSPITAL-GRADE TYPE (WHERE REQUIRED).
c ⚠ CAUTION	Ultrasound system requires all covers. Operate this Ultrasound system only when all board covers and frame panels are securely in place. The covers are required for safe operation, good Ultrasound system performance and cooling purposes.
c ⚠ CAUTION	Use only power supply cords, cables and plugs provided by or designated by GE.

Connect AC/DC to the Docking Station/Cart

Mount the Venue 50 to the docking station/cart. Connecting AC/DC to the docking station/cart, involves preliminary checks of the power cord, voltage level and compliance with electrical safety requirements.

1. Ensure that the wall outlet is of appropriate type.
2. Uncoil the power cable, allowing sufficient slack so that the docking station/cart can be moved slightly.
3. Verify that the power cable is without any visible scratches or any sign of damage.
4. Verify that the on-site mains voltage is within the limits indicated on the rating label on the system.
5. Connect the Power Cable to the Power Inlet in the docking station/cart.

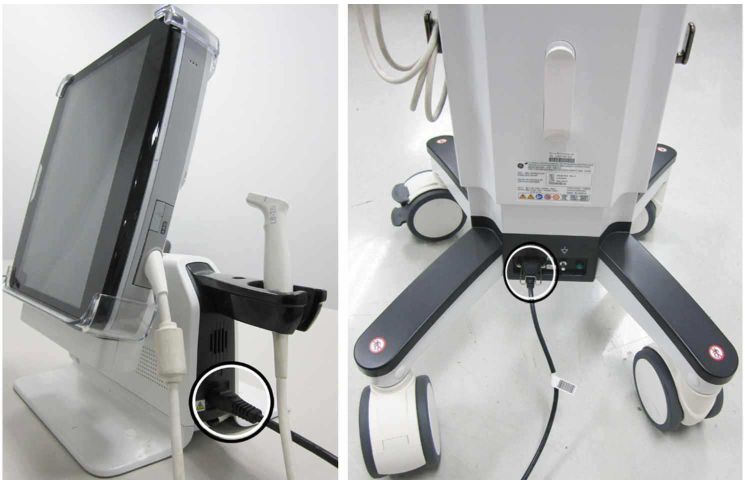


Figure 4-1. Docking Station AC/DC Connection

6. Connect the Power Cable's other end to a hospital grade mains power outlet with the proper rated voltage, and the unit is ready for Power ON/Boot Up.

Power on

Press Power On/Off key once, the system starts.

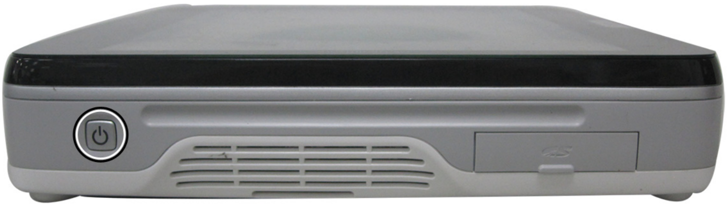


Figure 4-2. Power on the Venue 50

Power shut down

NOTE: *After truning off a system, wait at least ten seconds before turning it on again. The system may not be able to boot if power is recycled too quickly.*

Follow these steps to shut down the system:

1. Slightly press the **Power On/Off** switch once.
2. The System-Exit window is displayed.
3. Select **OK**.
4. The shutdown process takes several seconds and the power off sequence is complete when the power status LED is turned off.
5. Disconnect the probes. Clean or disinfect all probes as necessary. Store them in their shipping cases to avoid damage.

CAUTION

DO NOT unplug and/or transport the unit until after the power off sequence has been completed. Failure to do so may result in corrupted patient files.

Adjusting the Display Monitor

See 'Adjust Brightness' on *page 6-3 for more information.*

Functional checks

Overview

In this section, the functional checks for Venue 50 are described. Functional checks are used to verify that the product works as intended. Functional checks may also be used during troubleshooting.

Touch Panel

The touch panel contains exam function and mode/function specific controls.

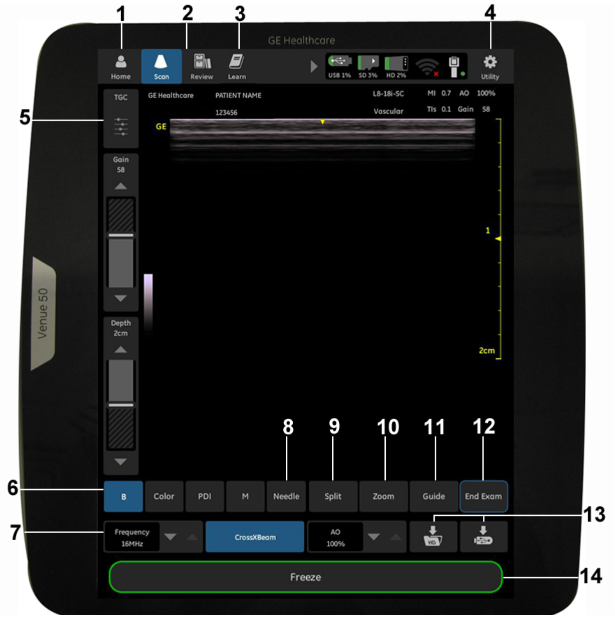

1
2
3
4
5
6
7
8
9
10
11
12
13
14
GE Healthcare
Home
Scan
Review
Learn
Utility
TGC
Gain 58
Depth 2cm
Venue 50
B
Color
PDI
M
Needle
Split
Zoom
Guide
End Exam
Frequency 16MHz
CrossXBeam
AO 100%
Freeze

Figure 4-3. Venue 50 Menu Bar

1. Home: Enter home page
2. Scan, Review: Perform various functions
3. Learn : eSmart Trainer (option)
4. Utility: Activate system configuration menus
5. TGC, Gain, Depth: Adjust the image information
6. B, Color, PDI, M: Switch to different modes
7. Frequency 16MHz ▼ CrossXBeam AO 100% ▼ : configurable parameters
8. Needle: Enhance visualization of the needle
9. Split: Split the screen into two
10. Zoom: Magnify a region of interest
11. Guide: Display the biopsy guidelines
12. End Exam: Press to end an exam
13. Dataflow Button: Store the patient information or print the scanning images.
14. Freeze: Stop the acquisition of ultrasound data and freeze the image in system memory.

CAUTION

Use only fingers, or fingers with gloves to operate on the system. Never use any sharp tools to scratch the LCD.

Monitor Display

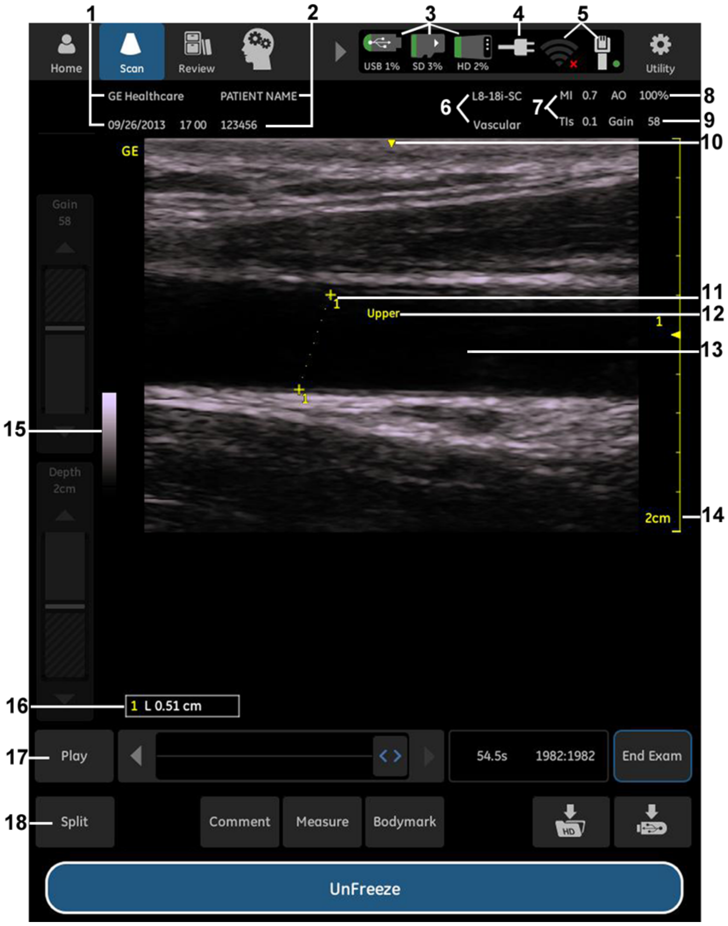

1
2
3
4
5
Home
Scan
Review
USB 1%
SD 3%
HD 2%
Utility
GE Healthcare
PATIENT NAME
09/26/2013
17 00
123456
6
L8-18i-SC
Vascular
7
MI 0.7
TIs 0.1
AO 100%
Gain 58
8
9
10
GE
Gain
58
Depth
2cm
11
12
Upper
13
15
2cm
14
16
1 L 0.51 cm
17
Play
54.5s
1982:1982
End Exam
18
Split
Comment
Measure
Bodymark
HD
UnFreeze

Figure 4-4. Monitor Display

1. Institution/Hospital Name, Date, Time
2. Patient Name, Patient ID
3. Storage device status
4. Battery status
5. Wireless and local network connection status
6. Probe and application
7. MI, TI
8. Acoustic Output
9. Gain
10. Center line mark
11. Measurement caliper
12. Comment
13. Image area
14. Depth scale
15. Gray/Color bar
16. Measurement result window
17. Cine Gauge
18. Function controls

Performance Tests

Before performing the tests, please follow the steps first.

1. Connect one of the probes.

   For available probes, See 'Available probes' on *page 3-54 for more information.*.

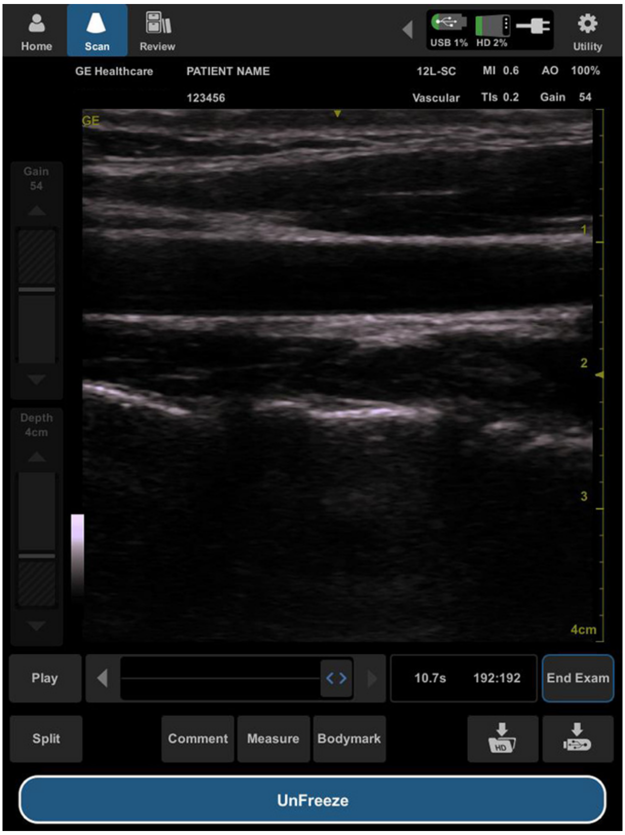
   See 'Connect a probe' on *page 3-25 for more information.*

2. Turn ON the scanner (if it isn't turned on already).

B Mode Checks

Introduction

B Mode is intended to provide two dimensional images and measurement capabilities concerning the anatomical structure of soft tissue.



GE Healthcare

PATIENT NAME

123456

12L-SC

Vascular

MI 0.6

TIs 0.2

AO 100%

Gain 54

Depth 4cm

10.7s

192:192

Home
Scan
Review
USB 1%
HD 2%
Utility
GE
1
2
3
4cm
Play
End Exam
Split
Comment
Measure
Bodymark
HD
UnFreeze

Figure 4-5. B Mode Screen

B Mode Controls

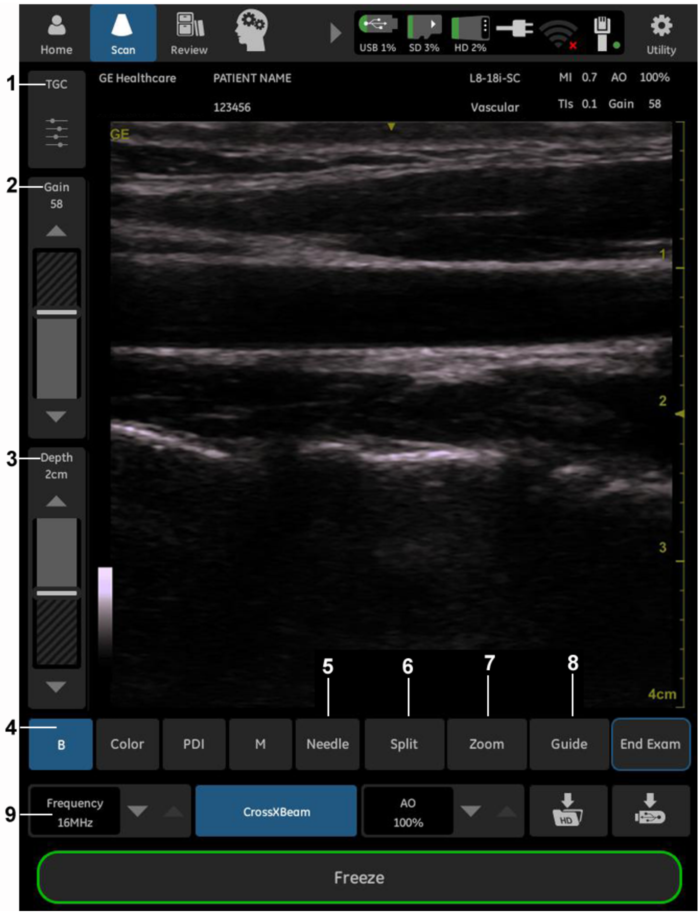

Home
Scan
Review
USB 1%
SD 3%
HD 2%
Utility
1
TGC
GE Healthcare
PATIENT NAME
123456
L8-18i-SC
Vascular
MI 0.7
AO 100%
TIs 0.1
Gain 58
2
Gain
58
3
Depth
2cm
1
2
3
4cm
5
6
7
8
4
B
Color
PDI
M
Needle
Split
Zoom
Guide
End Exam
9
Frequency
16MHz
CrossXBeam
AO
100%
HD
Freeze

Figure 4-6. B Mode Controls

Table 4-1: B Mode Controls

Controls	Affect on Image
TGC	Adjust TGC to balance the image so that the density of echoes is the same throughout the image.
Gain	Makes images brighter or darker.
Depth	Press to increase or decrease scanning depth.
B/Color/PDI/M	Switch to PDI/Color Flow/M mode, different option for different packages.
Needle	Press to activate the Needle mode. Gain, Angle and Tilt can be activated. The needle function only applies to linear probes. Note: Before activating the Needle mode, please make sure to select Interventional preset first.

Table 4-1: B Mode Controls

Controls	Affect on Image
Split	Press to split the screen into two.
Zoom	Press to magnify the region of interest.
Guide	Press to display the biopsy guidelines.
Configurable Parameters	• LiveGain: To balance echo contrast so that cystic structures appear echo-free and reflecting tissue fills in. • Frequency: This optimizes the probe’s wide band imaging capabilities at multiple frequencies to image at greater depths. • CrossXBeam: Improve contrast resolution with increased conspicuity of low contrast lesions, better detection of calcifications, biopsy needle visualization, and cystic boundary definition. • Gray Map: Affects the presentation of B Mode information. • Focus Pos: Focus optimizes the image by increasing the resolution for a specific area. • Reverse: Used for anatomical correctness. • ATO Level: Select the Auto Tissue Optimize Level to pick a preference for the contrast enhancement in the resulting image. • Dynamic Range: It is useful for optimizing tissue texture for different anatomy. • Compression: Suppress the noise in the image. • Rejection: Allow for the elimination from the display of low level echoes caused by noise. • Frame Aver: Smooth the image. • SRI HD: Smooth the image when image speckle interferes with the desired image detail • Edge Enhance: Make the image edge clearer/sharper. • FOV: Adjust field of view • AO: Adjust acoustic output
Note: The configurable parameters can be configured in Utility->Settings->ScanConfig.	

Color Flow Mode Checks

Introduction

Color Flow Mode is a Doppler Mode intended to add color-coded qualitative information concerning the relative velocity and direction of fluid motion within the B-Mode image.

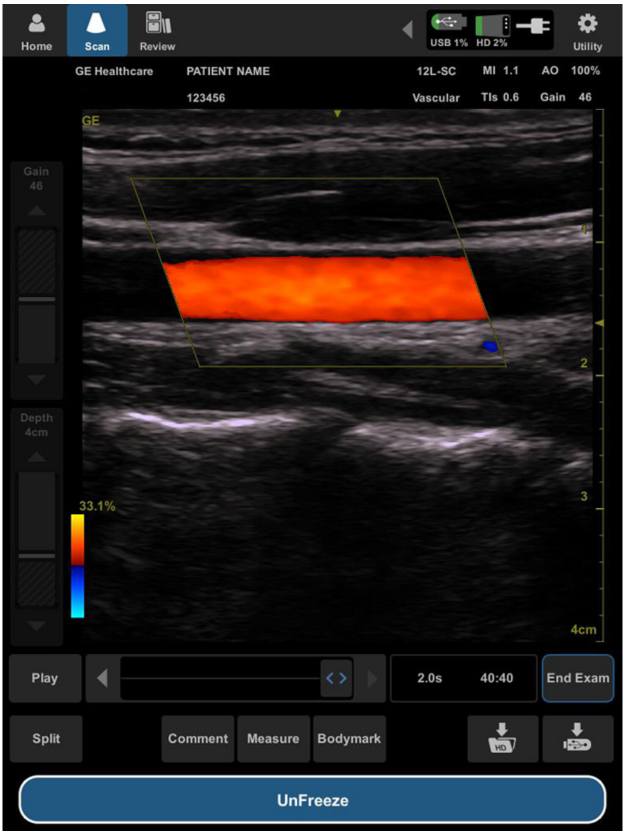
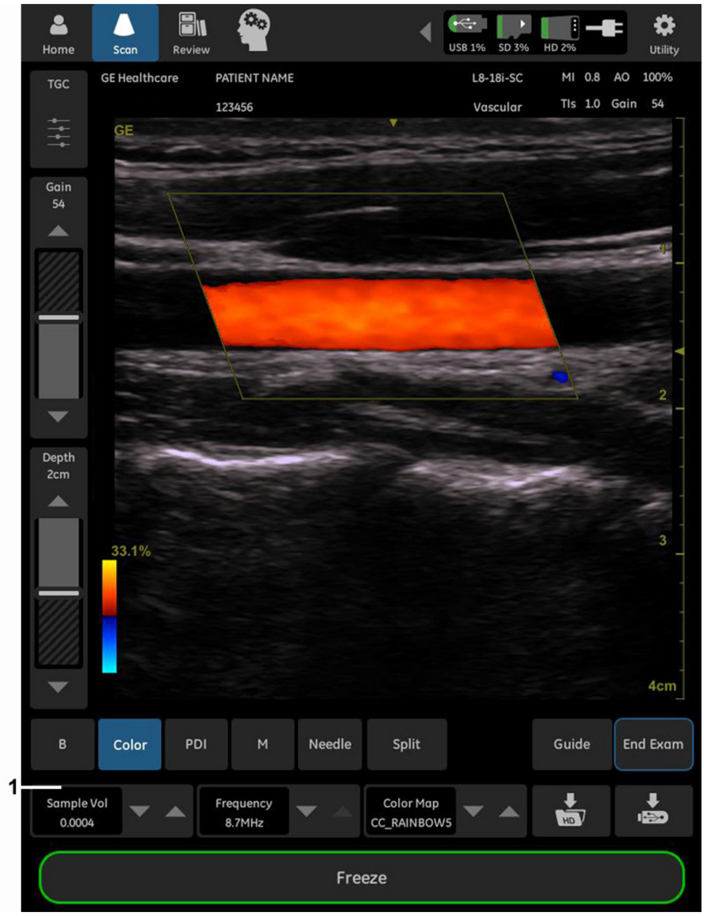

Home
Scan
Review
USB 1%
HD 2%
Utility
GE Healthcare
PATIENT NAME
123456
12L-SC
Vascular
MI 1.1
TIs 0.6
AO 100%
Gain 46
GE
Gain
46
Depth
4cm
33.1%
1
2
3
4cm
Play
2.0s
40:40
End Exam
Split
Comment
Measure
Bodymark
HD
UnFreeze

Figure 4-7. Color Flow Mode Screen

Color Flow Mode Controls


Home
Scan
Review
USB 1%
SD 3%
HD 2%
Utility
TGC
Gain
54
Depth
2cm
GE Healthcare
PATIENT NAME
123456
L8-18i-SC
Vascular
MI 0.8
AO 100%
TIs 1.0
Gain 54
GE
33.1%
1
2
3
4cm
B
Color
PDI
M
Needle
Split
Guide
End Exam
1
Freeze

Sample Vol 0.0004

Frequency 8.7MHz

Color Map CC_RAINBOW5

Figure 4-8. Color Flow Mode Controls

Table 4-2: CF Mode Controls

Controls	Affect on Image
Configurable Parameters	• Scale: Imaging of higher velocity flow requires increased scale values to avoid aliasing. • Threshold: Limit color flow overlay to low level echoes inside vessel walls. Help to minimize color ‘bleeding’ outside vessel walls. • Sample Vol: Place the sample volume gate to sample blood flow. • Steer: Provide a doppler cursor angle suitable for linear probe orientation. • Wall Filter: Decrease, unnecessary low frequency signals caused by motion. • Color Map: Show the direction of the flow and highlight the higher velocity flows. • Invert: Allow to view blood flow according to personal preference, without flipping the probe.
See Table 4-1 for more information.	

Power Doppler Imaging Mode Checks

Introduction

Power Doppler Imaging (PDI) is a color flow mapping technique used to map the strength of the Doppler signal coming from the flow rather than the frequency shift of the signal.

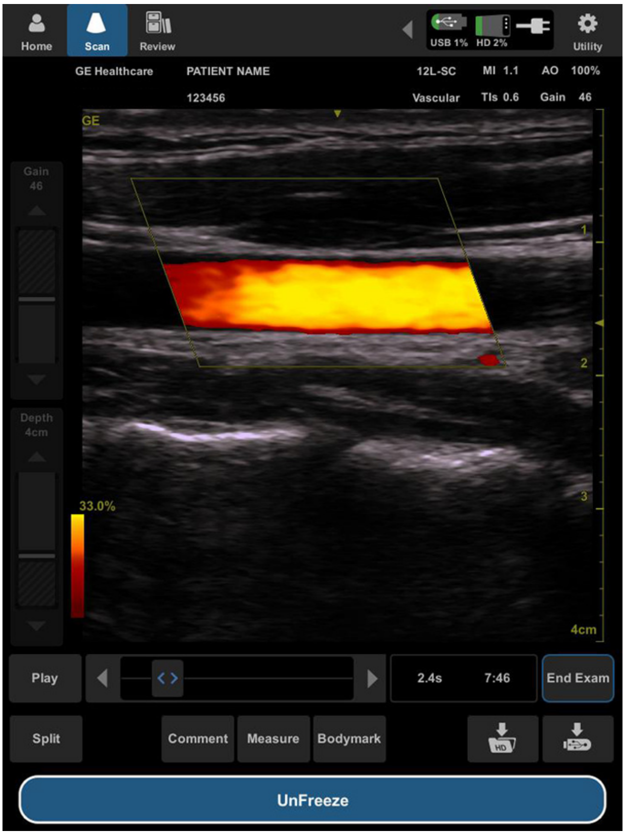
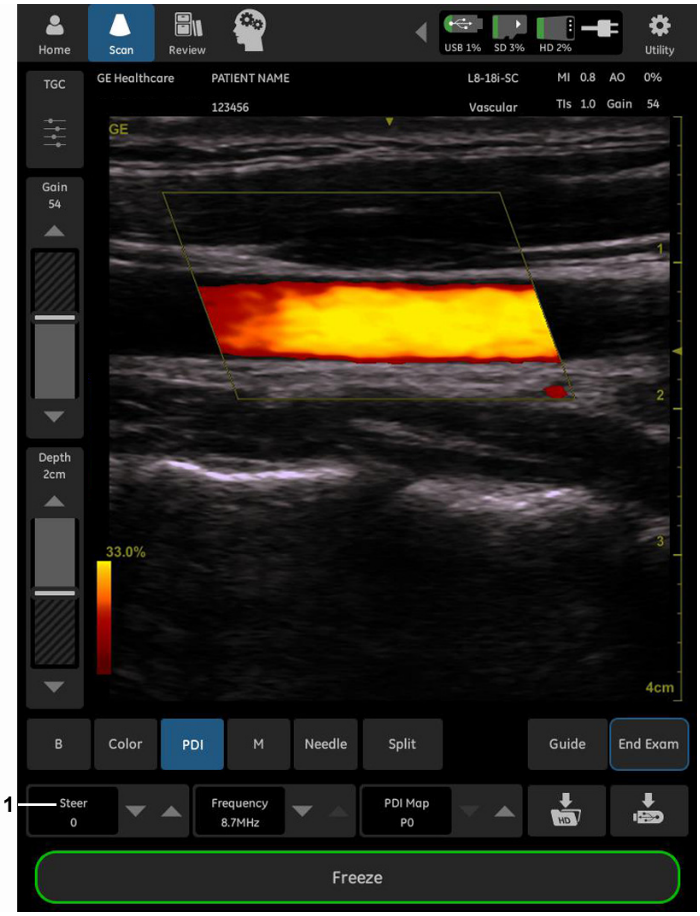

Home
Scan
Review
USB 1%
HD 2%
Utility
GE Healthcare
PATIENT NAME
123456
12L-SC
Vascular
MI 1.1
TIs 0.6
AO 100%
Gain 46
GE
Gain
46
Depth
4cm
33.0%
1
2
3
4cm
Play
2.4s
7:46
End Exam
Split
Comment
Measure
Bodymark
HD
UnFreeze

Figure 4-9. Power Doppler Imaging Mode Screen

Power Doppler Imaging Mode Controls



Gain 54

Depth 2cm

Steer 0

Frequency 8.7MHz

PDI Map P0

Home
Scan
Review
USB 1%
SD 3%
HD 2%
Utility
TGC
GE Healthcare
PATIENT NAME
123456
L8-18i-SC
Vascular
MI 0.8
AO 0%
TIs 1.0
Gain 54
GE
33.0%
1
2
3
4cm
B
Color
PDI
M
Needle
Split
Guide
End Exam
1
HD
Freeze

Figure 4-10. Power Doppler Imaging Mode Controls

Table 4-3: PDI Mode Controls

Controls	Affect on Image
Configurable Parameters	• PDI Map: Show the power of the flow and highlight the stronger power flows.
See Table 4-1 and Table 4-2 for more information.	

M Mode Checks

Introduction

M Mode is intended to provide a display format and measurement capability that represents tissue displacement (motion) occurring over time along a single vector.

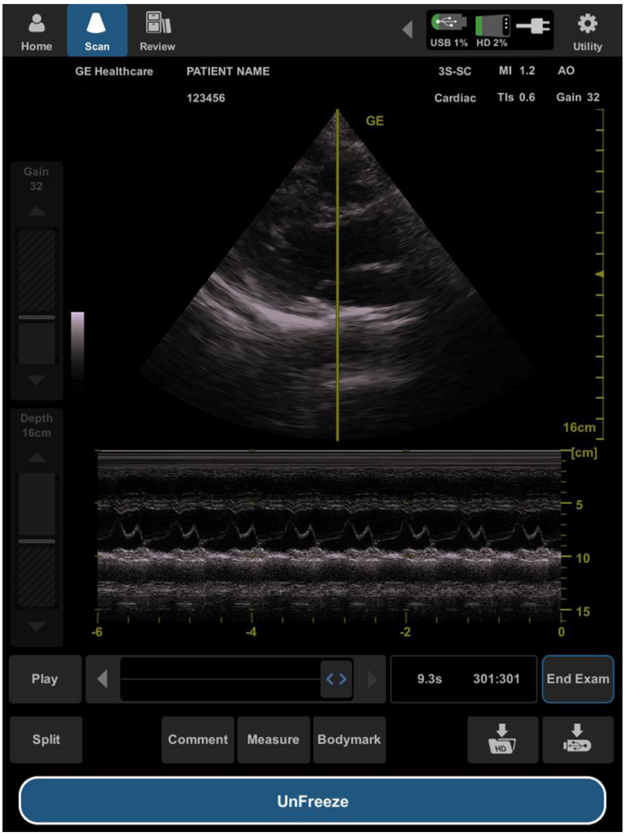

Home
Scan
Review
USB 1%
HD 2%
Utility
GE Healthcare
PATIENT NAME
123456
3S-SC
Cardiac
MI 1.2
TIs 0.6
AO
Gain 32
GE
Gain
32
Depth
16cm
16cm
[cm]
5
10
15
-6
-4
-2
0
Play
9.3s
301:301
End Exam
Split
Comment
Measure
Bodymark
HD
UnFreeze

Figure 4-11. M Mode Screen

M Mode Controls

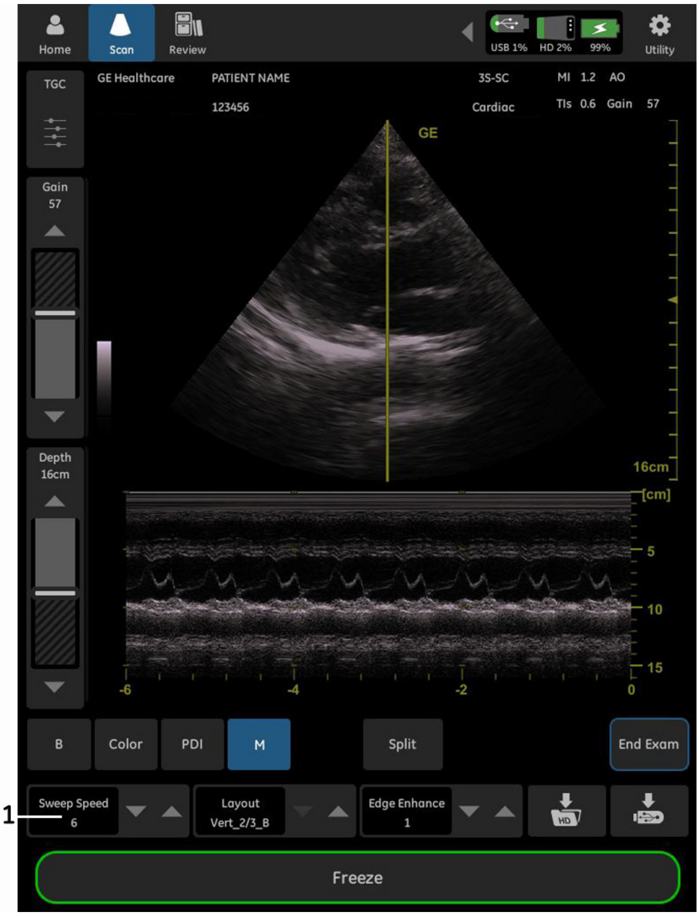

Home
Scan
Review
USB 1%
HD 2%
99%
Utility
TGC
GE Healthcare
PATIENT NAME
123456
3S-SC
Cardiac
MI 1.2 AO
TIs 0.6 Gain 57
GE
Gain
57
Depth
16cm
16cm
[cm]
5
10
15
-6
-4
-2
0
B
Color
PDI
M
Split
End Exam
1
Sweep Speed
6
Layout
Vert_2/3_B
Edge Enhance
1
Freeze

Figure 4-12. M Mode Controls

Table 4-4: M Mode Controls

Controls	Affect on Image
Configurable Parameters	• Sweep Speed: Change the speed of the timeline. • Layout: Change the Horizontal/Vertical layout between B Mode and M Mode.
See Table 4-1 for more information.	

Basic Measurements

*NOTE: The following instructions assume that you first scan the patient and then press **Freeze**.*

Distance Measurements

1. Press **Measure**.
2. Select **Distance**.
3. Touch the screen, and two active calipers display.
4. Move the calipers to the desired position.
5. Press **Set**, then the value is displayed in the results window.

Circumference/Area (Ellipse) Measurement

1. Press **Measure**.
2. Select **Ellipse**.
3. Touch the screen, and three active calipers display.
4. Move the calipers to the desired position.
5. Press **Set**, then the value is displayed in the results window.

M Mode Measurements

1. Press **Measure**.
2. Select **Depth** or **Heart Rate**.
3. Touch the screen and two active calipers display.
4. Move the calipers to the desired position.
5. Press **Set**, then the value is displayed in the results window.

Probe/Connectors Check

NOTE: Probes can be connected at any time, whether the unit is ON or OFF

Connecting a Probe

See 'Connect a probe' on *page 3-25 for more information.*

Activating the probe

The probe activates in the currently-selected operating mode. The probe's default settings for the mode and selected exam are used automatically.

Deactivating the probe

When the probe is deactivated, it is automatically placed in standby mode.

1. Press ***Freeze***.
2. Gently wipe the excess gel from the face of the probe. (Refer to the Basic User Manual for complete probe cleaning instructions).
3. Carefully put the probe to the probe holder.

Disconnecting the probe

Probes can be disconnected at any time. However, the probe should not be selected as the active probe.

See 'Disconnect a probe' on *page 3-27 for more information.*

WARNING *Take the following precautions with the probe cables: Do not bend. If you have purchased the cart option, be sure to keep probe cables free from the wheels.*

WARNING *Be careful not to trip on the probe cables if using the device without the optional cart.*

Cineloop Check

Introduction

A cineloop is a sequence of images recorded over a certain time frame. You can view cine as a continuous loop via cine loop or manually review cine images frame by frame. Data in cine is available until new data is acquired. Cine can be archived in the storage device.

Activating CINE

Press **Freeze** to activate CINE. To start CINE Loop playback, press **Play/Pause**. To stop CINE Loop playback. press **Play/Pause**.

Moving through a CINE Loop Frame By Frame

Press < or > to move through CINE memory one frame at a time.

Image Management

For Image Management functionality refer to the Venue 50 User Manual. It talks about several topics:

- Zooming an Image
- Split Screen
- Using Cine
- Review Archived Information
- Image Storage
- eSmart Trainer (Option)

Software Configuration Checks

Table 4-5: Software Configuration Checks

Step	Task to do	Expected Result(s)
1.	Check Date and Time setting	Date and Time are correct
2.	Check that Location (Hospital Name) is correct	Location Name is correct
3.	Check Language settings	Desired Language is displayed
5.	Check that all of the customer's options are set up correct	All authorized functions are enabled

Peripheral Checks

This section describes the final setup for the Peripherals and the Operational Check-out. For Peripherals installtion information, See ‘Peripherals Connection’ on *page 3-35 for more information.*

Check that peripherals work as described below:

SD Card Checks

Table 4-6: SD Card Checks

Step	Task to do	Expected Result(s)
1.	Insert SD card to the SD card socket on top of the system.	The storage device status icon will display the SD Card capacity on top of the screen.
2.	Press Utility->Connectivity->Dataflow, configure SD card as D1 or D2.	The SD card icon will be shown on the Dataflow Button.
3.	Press Dataflow Button with SD Card Icon to store the patient information.	The patient information is stored to the SD Card.

USB Memory Stick Checks

Table 4-7: USB Memory Stick Checks

Step	Task to do	Expected Result(s)
1.	Connect USB Memory Stick to the USB port on top of the system or to Docking Station/ Cart.	The storage device status icon will display the USB Memory Stick capacity on top of the screen.
2.	Press Utility->Connectivity->Dataflow, configure USB Memory Stick as D1 or D2.	The USB Memory Stick icon will be shown on the Dataflow Button.
3.	Press Dataflow Button with USB Memory Stick Icon to store the patient information.	The patient information is stored to the USB Memory Stick.

B/W Printer Checks

Table 4-8: B/W Printer Checks

Step	Task to do	Expected Result(s)
1.	Connect Printer to Docking Station/Cart, then plug power cord into wall outlet. Power on the printer.	The printer is powered on.
2.	Press Utility->Connectivity->Dataflow, configure Printer as D1 or D2.	The Printer icon will be shown on the Dataflow Button.
3.	Press Dataflow Button with Printer Icon to print the images.	The images are printed.

Wireless Network Card Checks

Table 4-9: Wireless Network Card Checks

Step	Task to do	Expected Result(s)
1.	Connect the wireless network card to the USB port.	
2.	Press Utility->Connectivity->Wireless.	
3.	Connect to the desired wireless network.	The wireless network status icon will display as “Connected” or “Connceting”on the screen.

Footswitch Checks

Table 4-10: Footswitch Checks

Step	Task to do	Expected result(s)
1.	Connect the footswitch to the USB port.	
2.	Configure footswitch in Utility->Settings->USB Accessories.	
3.	Press the configured pedal of the footswitch.	The system will respond as the configured function for the footswitch.

Barcode Reader Checks

Table 4-11: Barcode Scanner Checks

Step	Task to do	Expected result(s)
1.	Connect Barcode Scanner to the USB port.	
2.	Activate Barcode Reader in Utility->Settings->USB Accessories.	
3.	Scan barcode.	A beep should be heard and the patient information will be shown on the Home screen.

Chapter 5

Components and Functions (Theory)

This chapter explains Venue 50's system concepts, component arrangement, and subsystem functions.

It also describes the power distribution system and probes.

Overview

Contents in this chapter

- ‘Overview’ on *page 5-2*
- ‘Block Diagram and Theory’ on *page 5-3*

Block Diagram and Theory

Block Diagram of Venue 50 and Docking Station/Cart

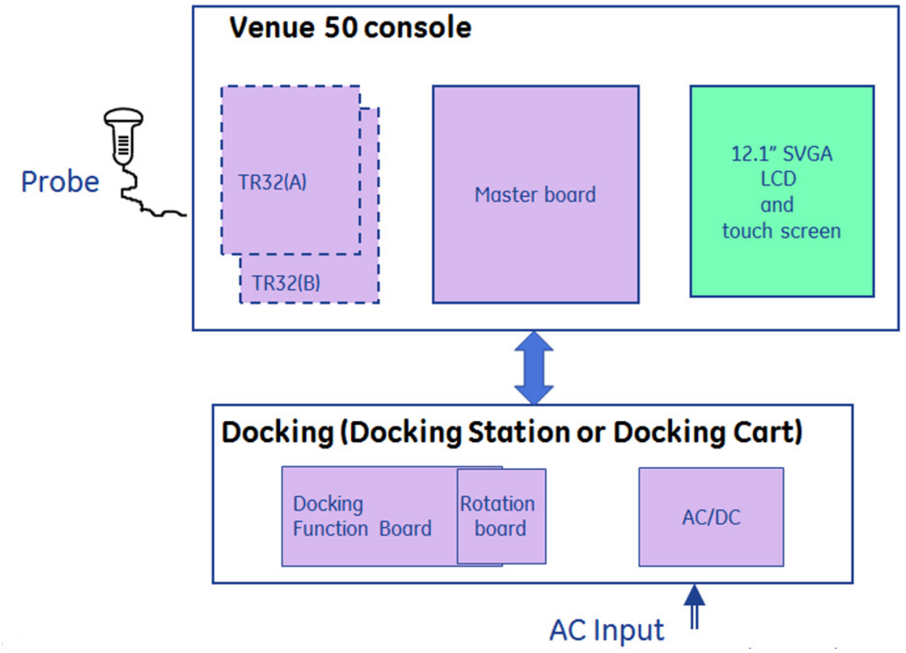

Venue 50 console
Probe
TR32(A)
TR32(B)
Master board
12.1" SVGA LCD and touch screen
Docking (Docking Station or Docking Cart)
Docking Function Board
Rotation board
AC/DC
AC Input

Figure 5-1. Venue 50 and Docking Station System Block Diagram

Chapter 6

Service Adjustments

This chapter describes how to test and make adjustments to the Venue 50. You can use these to test the system for errors.

Overview

Contents in this chapter

- ‘Overview’ on *page 6-2*
- ‘Monitor Adjustments’ on *page 6-3*

Monitor Adjustments

Adjust Brightness

To adjust the brightness:

1. Press **Utility**->**Settings**->**Common**, then choose the desired brightness in the **Brightness** select box.

Adjust Volume

To adjust the volume:

1. Press **Utility**->**Settings**->**Miscellaneous**, then choose the desired volume in the **Volume** select box.

Adjust Monitor on Docking Station/Cart

To adjust the monitor on Docking Station/Cart:

1. Tilt the LCD monitor for the optimum viewing angle. The maximum angle is 45 degrees.

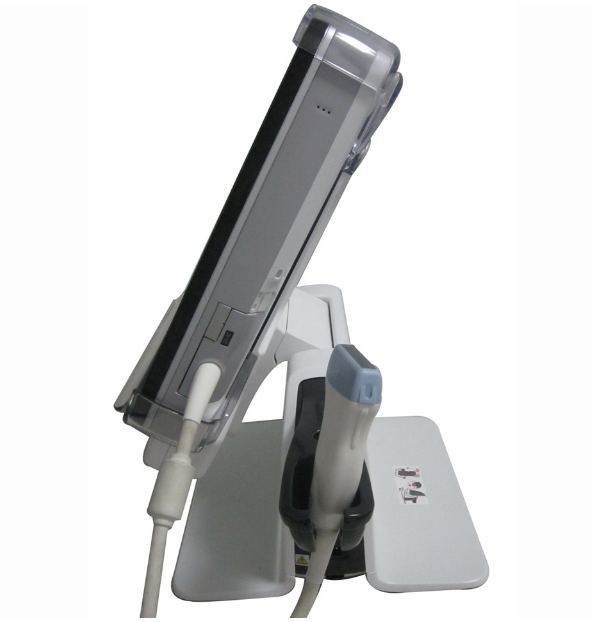


Figure 6-1. Tilt the LCD monitor

Adjust Monitor on Docking Station/Cart (continued)

To adjust the height of Docking Cart:

1. Hold the cart handle by both hands, step on the pedal, push down or lift to adjust the height.

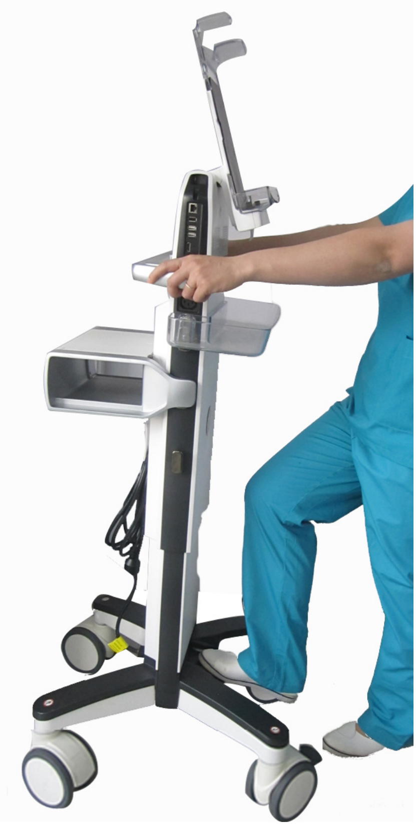


Figure 6-2. Cart height adjustment

Adjust Monitor on Docking Station/Cart (continued)

CAUTION

Be sure to lock the wheels before adjusting the Docking Cart height.

CAUTION

When the cart handles are used for power cable management, the sudden raising of the cart to a higher position may cause the AC plug to break.

CAUTION

When adjusting the cart while scanning, the power cord and wheels may become entangled causing cable damage.

CAUTION

Damage to the probe cable may result if the brake pedal catches the cable and pulls it tight against the base leg. This puts stress on the probe and connector while in the holder.

Chapter 7

Troubleshooting

This chapter describes how to setup and run the tools and software that help maintain image quality and system operation. Very basic host, system and board levels are run whenever power is applied. Some Service Tools may be run at the application level.

Overview

Contents in this chapter

- 'Overview' on *page 7-2*
- 'Troubleshooting' on *page 7-3*
- 'Remote Service' on *page 7-20*

Troubleshooting

Console Troubleshooting Trees

System Doesn't Boot

This is an overall diagram showing a recommended sequence for troubleshooting a no-boot situation

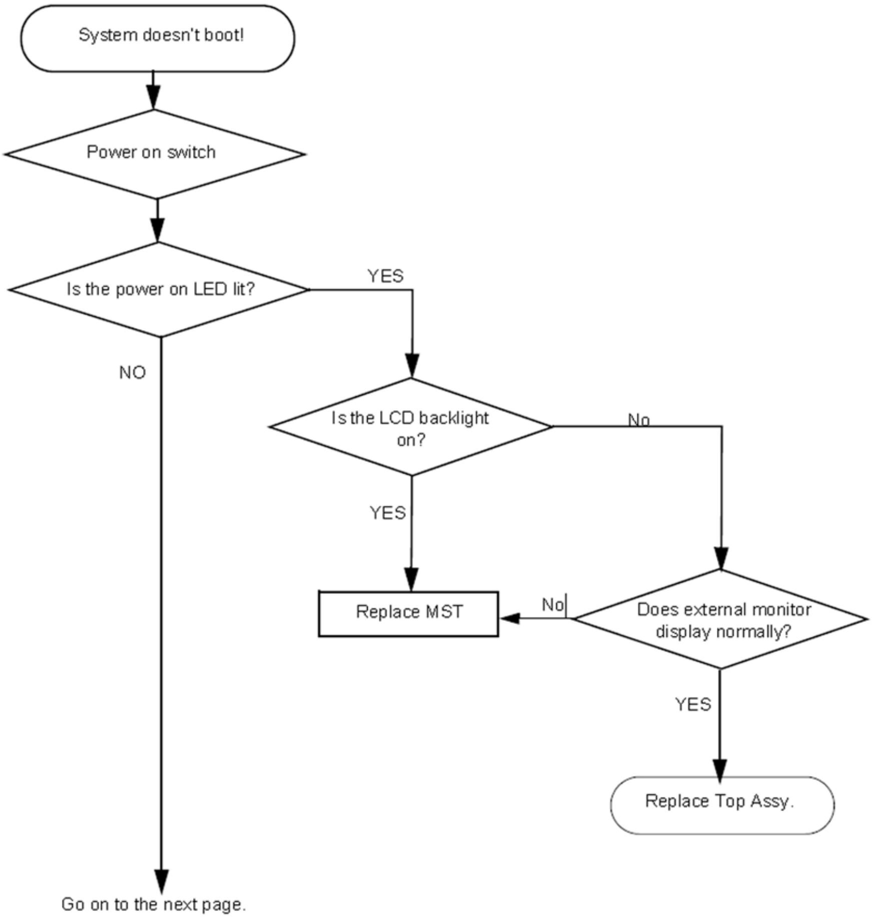

System doesn't boot!
Power on switch
Is the power on LED lit?
YES
NO
Is the LCD backlight on?
No
YES
Replace MST
No
Does external monitor display normally?
YES
Replace Top Assy.
Go on to the next page.

Figure 7-1. System Doesn't Boot

System Doesn’t Boot (continued)

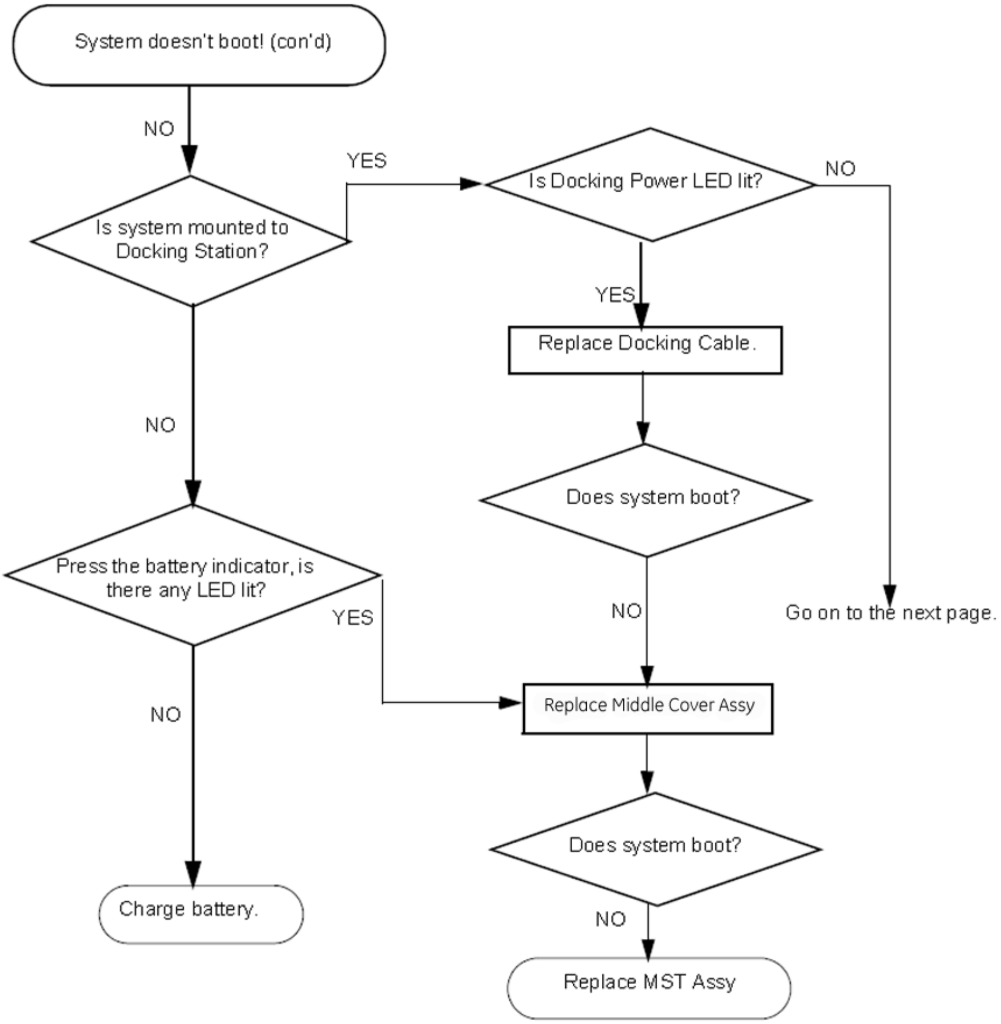

System doesn't boot! (con'd)
NO
Is system mounted to Docking Station?
YES
Is Docking Power LED lit?
NO
YES
Replace Docking Cable.
Does system boot?
NO
Go on to the next page.
NO
Press the battery indicator, is there any LED lit?
YES
NO
Replace Middle Cover Assy
Does system boot?
NO
Charge battery.
Replace MST Assy

Figure 7-2. System Doesn’t Boot (Cont’d)

System Doesn’t Boot (continued)

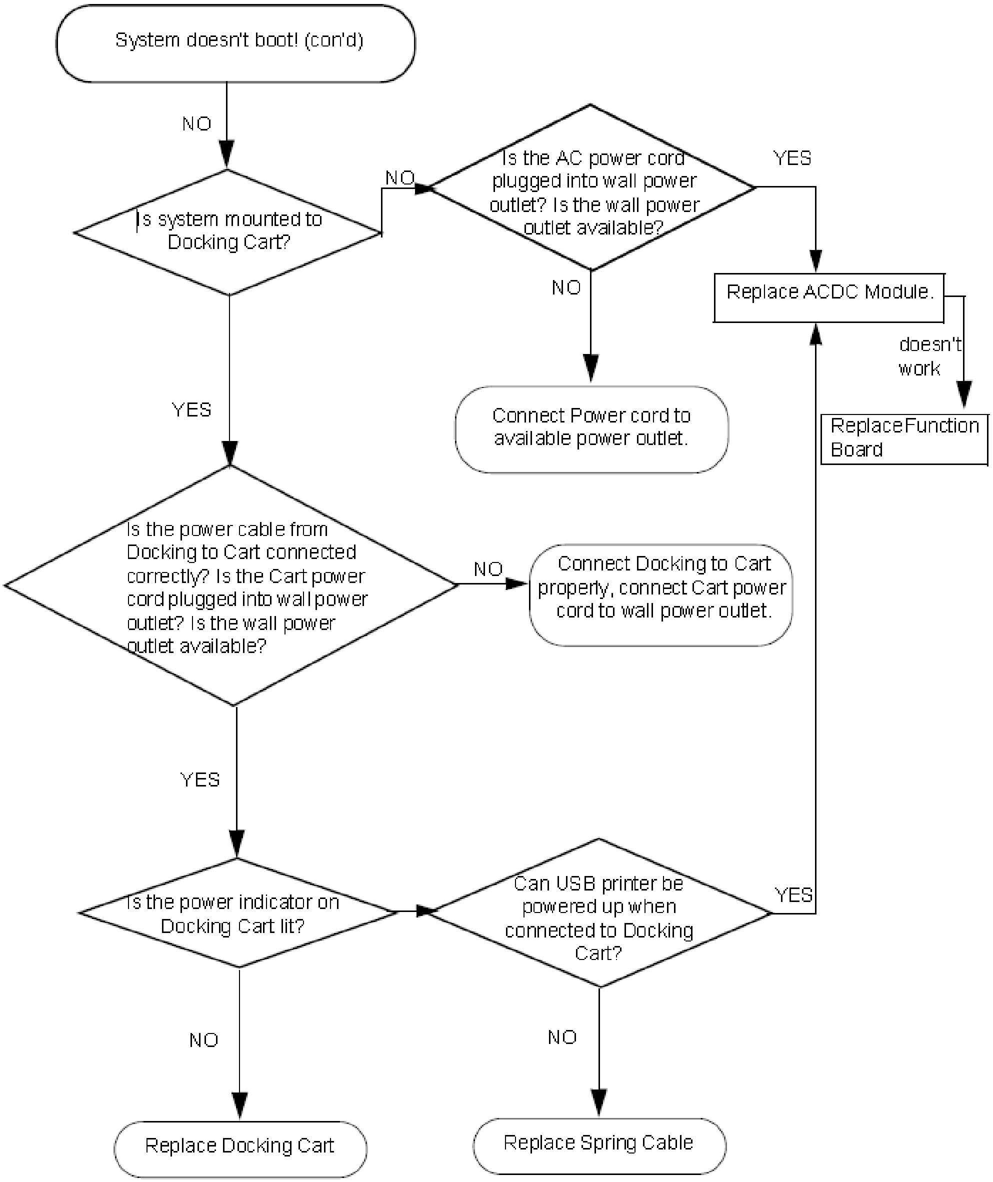

System doesn't boot! (con'd)
NO
Is system mounted to Docking Cart?
NO
Is the AC power cord plugged into wall power outlet? Is the wall power outlet available?
YES
Replace ACDC Module.
doesn't work
Replace Function Board
NO
Connect Power cord to available power outlet.
YES
Is the power cable from Docking to Cart connected correctly? Is the Cart power cord plugged into wall power outlet? Is the wall power outlet available?
NO
Connect Docking to Cart properly, connect Cart power cord to wall power outlet.
YES
Is the power indicator on Docking Cart lit?
Can USB printer be powered up when connected to Docking Cart?
YES
NO
NO
Replace Docking Cart
Replace Spring Cable

Figure 7-3. System Doesn’t Boot (Cont’d)

Structured Artifact in the image

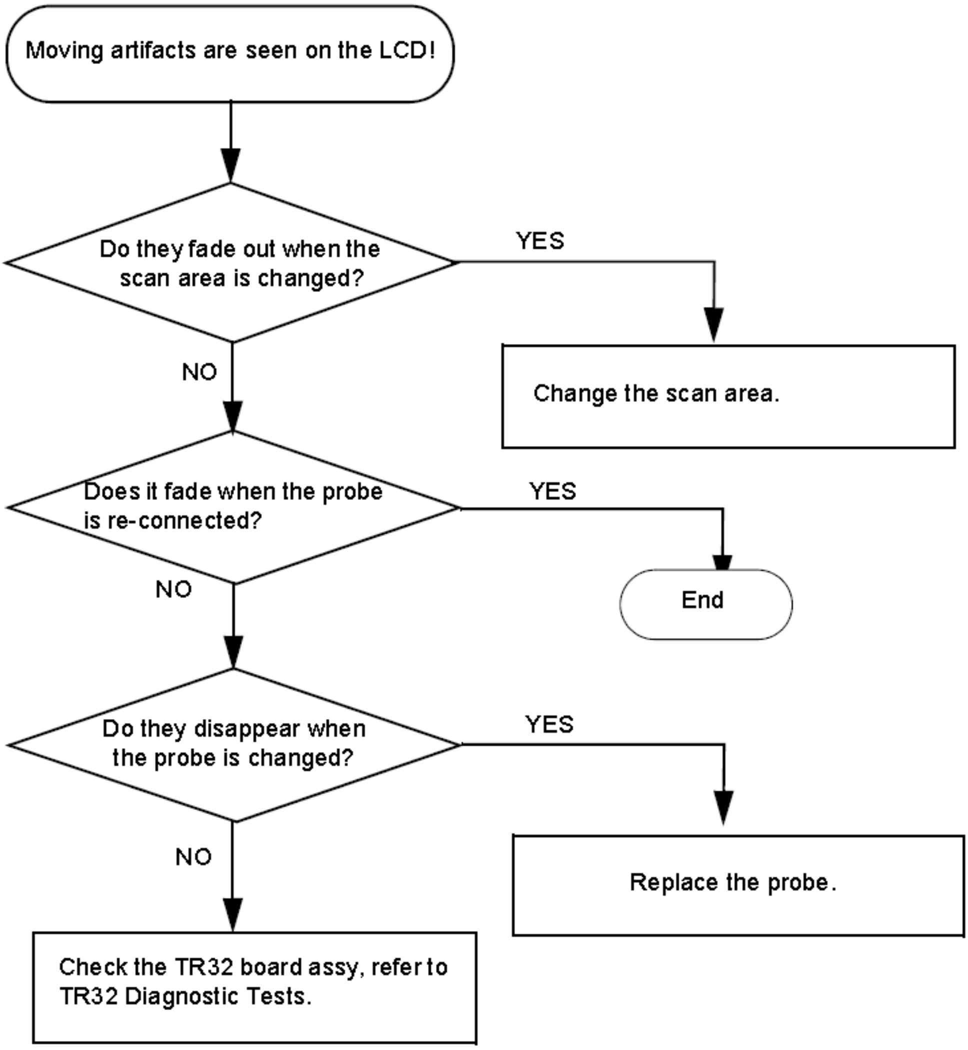

Moving artifacts are seen on the LCD!
Do they fade out when the scan area is changed?
YES
Change the scan area.
NO
Does it fade when the probe is re-connected?
YES
End
NO
Do they disappear when the probe is changed?
YES
Replace the probe.
NO
Check the TR32 board assy, refer to TR32 Diagnostic Tests.

Figure 7-4. Structured Artifact in the image

Structured Artifact in the image (continued)

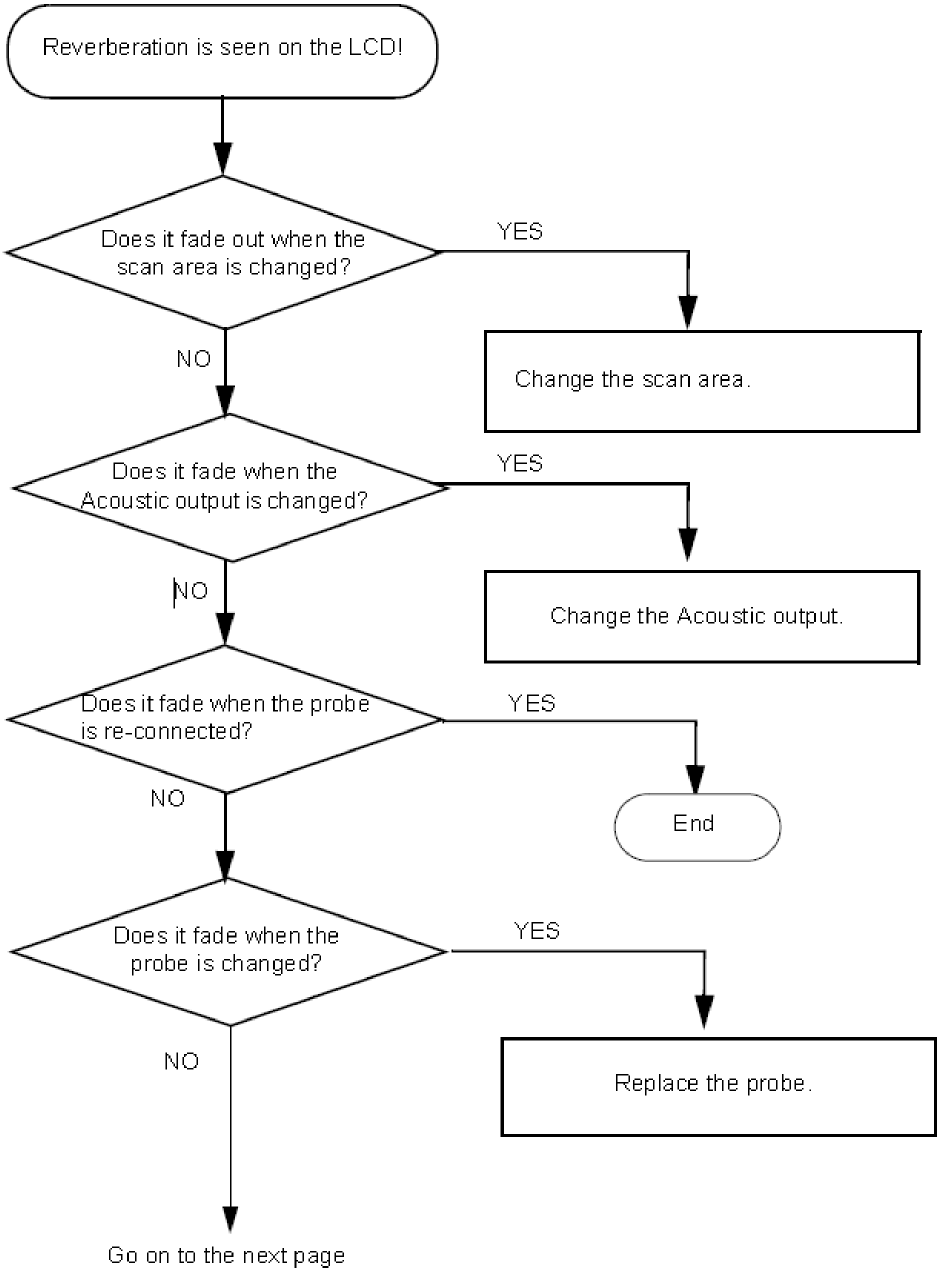

Reverberation is seen on the LCD!
Does it fade out when the scan area is changed?
YES
Change the scan area.
NO
Does it fade when the Acoustic output is changed?
YES
Change the Acoustic output.
NO
Does it fade when the probe is re-connected?
YES
End
NO
Does it fade when the probe is changed?
YES
Replace the probe.
NO
Go on to the next page

Figure 7-5. Structured Artifact in the image (Cont'd)

Structured Artifact in the image (continued)

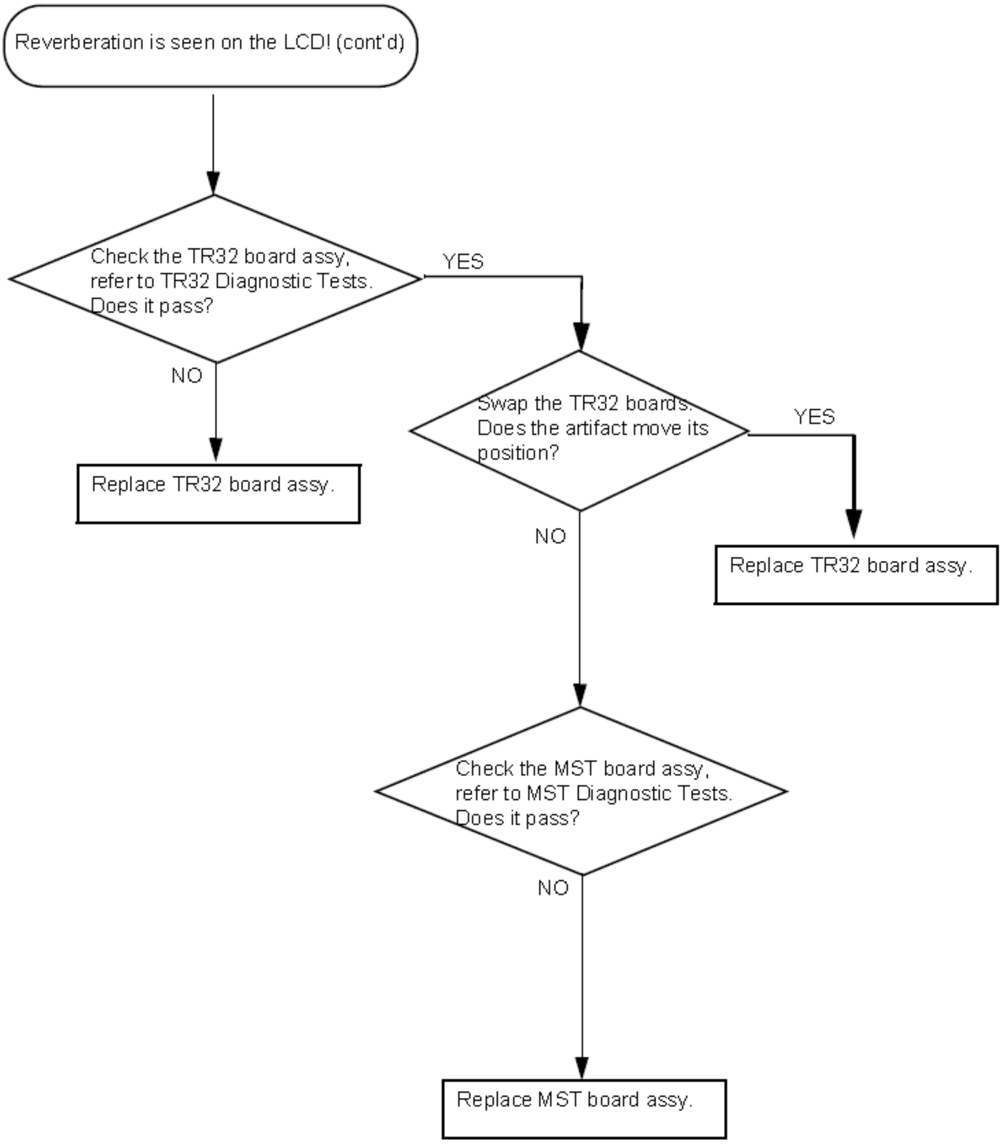

Reverberation is seen on the LCD! (cont'd)
Check the TR32 board assy, refer to TR32 Diagnostic Tests. Does it pass?
YES
NO
Replace TR32 board assy.
Swap the TR32 boards. Does the artifact move its position?
YES
NO
Replace TR32 board assy.
Check the MST board assy, refer to MST Diagnostic Tests. Does it pass?
NO
Replace MST board assy.

Figure 7-6. Structured Artifact in the image (Cont'd)

B Mode Low Sensitivity

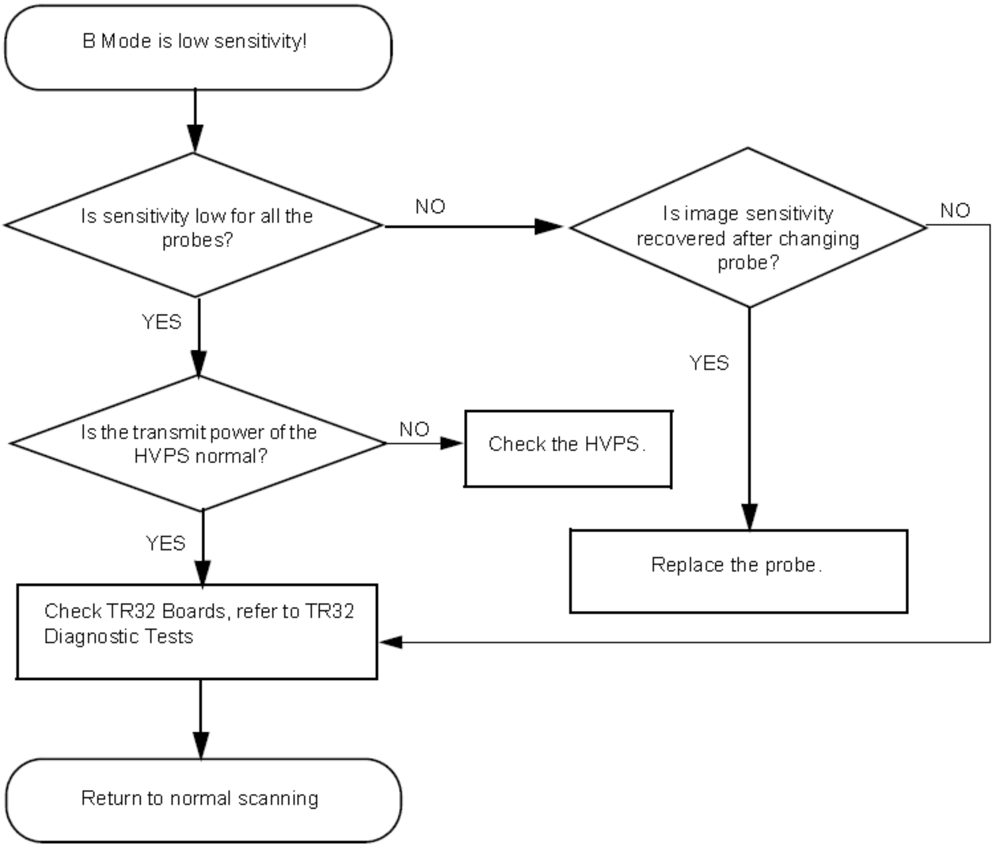

B Mode is low sensitivity!
Is sensitivity low for all the probes?
NO
Is image sensitivity recovered after changing probe?
NO
YES
YES
Is the transmit power of the HVPS normal?
NO
Check the HVPS.
YES
Replace the probe.
Check TR32 Boards, refer to TR32 Diagnostic Tests
Return to normal scanning

Figure 7-7. B Mode Low Sensitivity

B Mode Low Image Quality

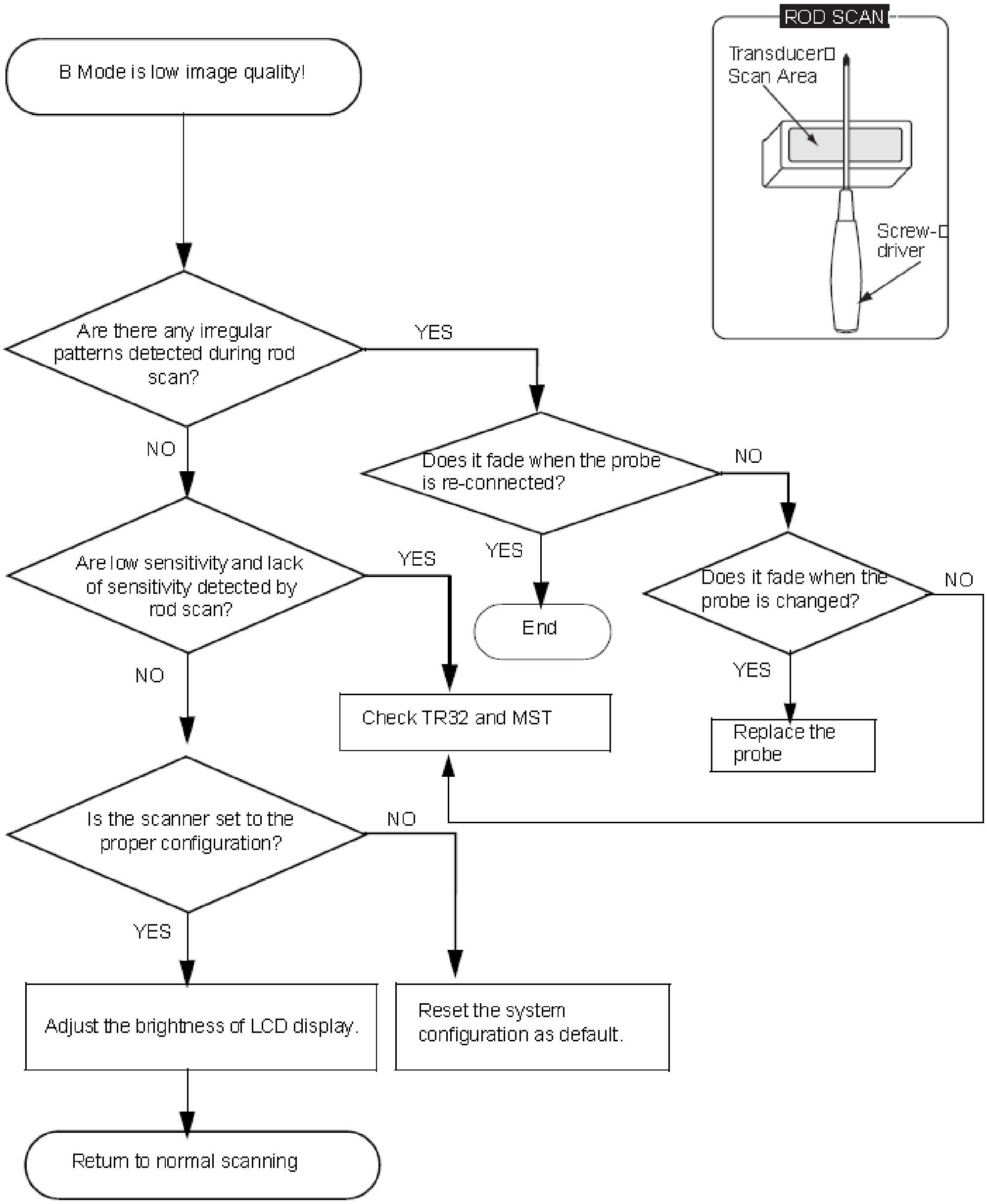

B Mode is low image quality!
Are there any irregular patterns detected during rod scan?
YES
NO
Does it fade when the probe is re-connected?
NO
YES
End
Does it fade when the probe is changed?
NO
YES
Replace the probe
Are low sensitivity and lack of sensitivity detected by rod scan?
YES
NO
Check TR32 and MST
Is the scanner set to the proper configuration?
NO
YES
Adjust the brightness of LCD display.
Reset the system configuration as default.
Return to normal scanning
ROD SCAN
Transducer Scan Area
Screw-driver

Figure 7-8. B Mode Low Image Quality

Noise in B Mode

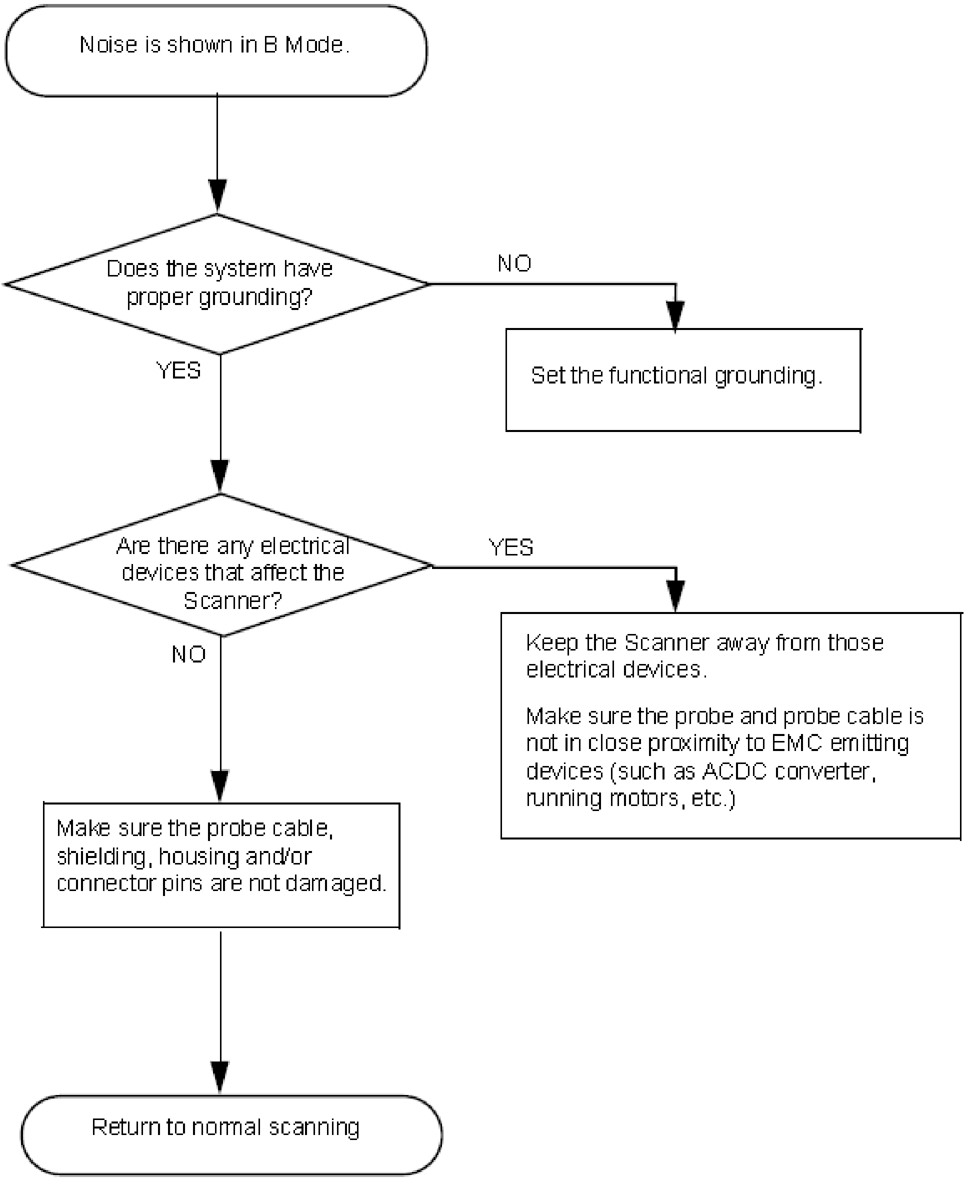

Noise is shown in B Mode.
Does the system have proper grounding?
NO
Set the functional grounding.
YES
Are there any electrical devices that affect the Scanner?
YES
Keep the Scanner away from those electrical devices.
Make sure the probe and probe cable is not in close proximity to EMC emitting devices (such as ACDC converter, running motors, etc.)
NO
Make sure the probe cable, shielding, housing and/or connector pins are not damaged.
Return to normal scanning

Figure 7-9. Noise in B Mode

Color Flow Low Sensitivity

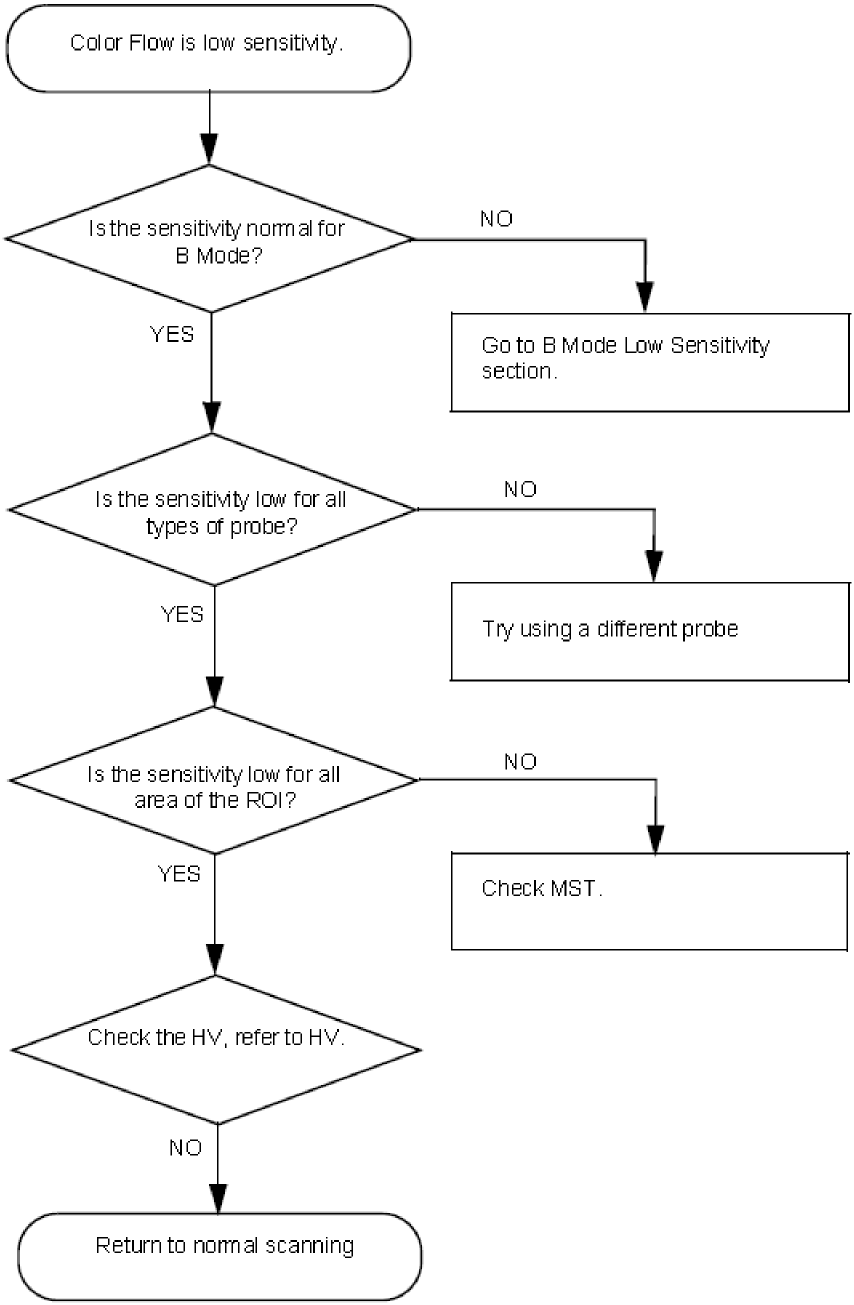

Color Flow is low sensitivity.
Is the sensitivity normal for B Mode?
NO
Go to B Mode Low Sensitivity section.
YES
Is the sensitivity low for all types of probe?
NO
Try using a different probe
YES
Is the sensitivity low for all area of the ROI?
NO
Check MST.
YES
Check the HV, refer to HV.
NO
Return to normal scanning

Figure 7-10. Color Flow Low Sensitivity

Nosie in Color Flow

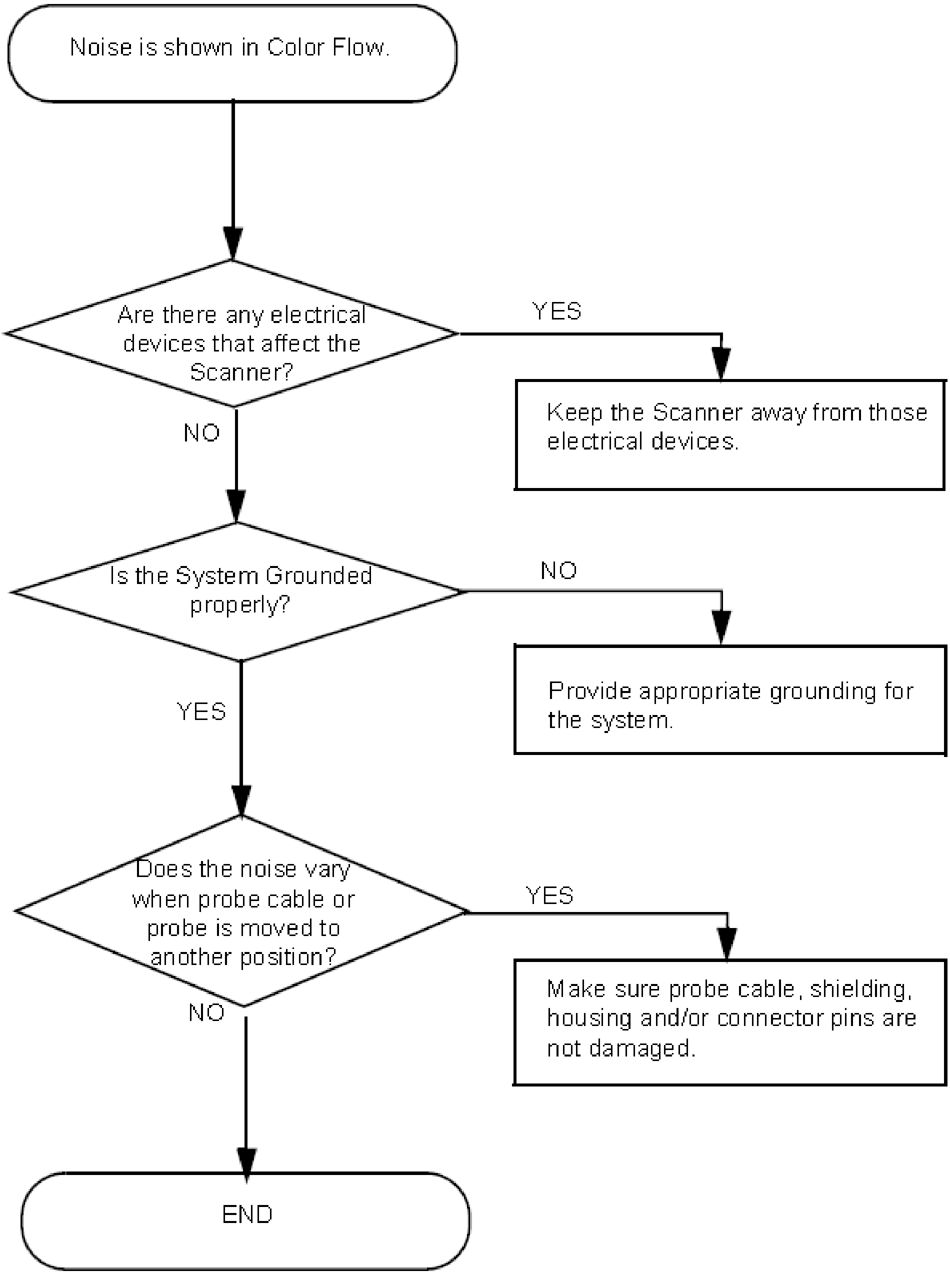

Noise is shown in Color Flow.
Are there any electrical devices that affect the Scanner?
YES
Keep the Scanner away from those electrical devices.
NO
Is the System Grounded properly?
NO
Provide appropriate grounding for the system.
YES
Does the noise vary when probe cable or probe is moved to another position?
YES
Make sure probe cable, shielding, housing and/or connector pins are not damaged.
NO
END

Figure 7-11. Noise in Color Flow

Touch panel - Impaired Sensitivity

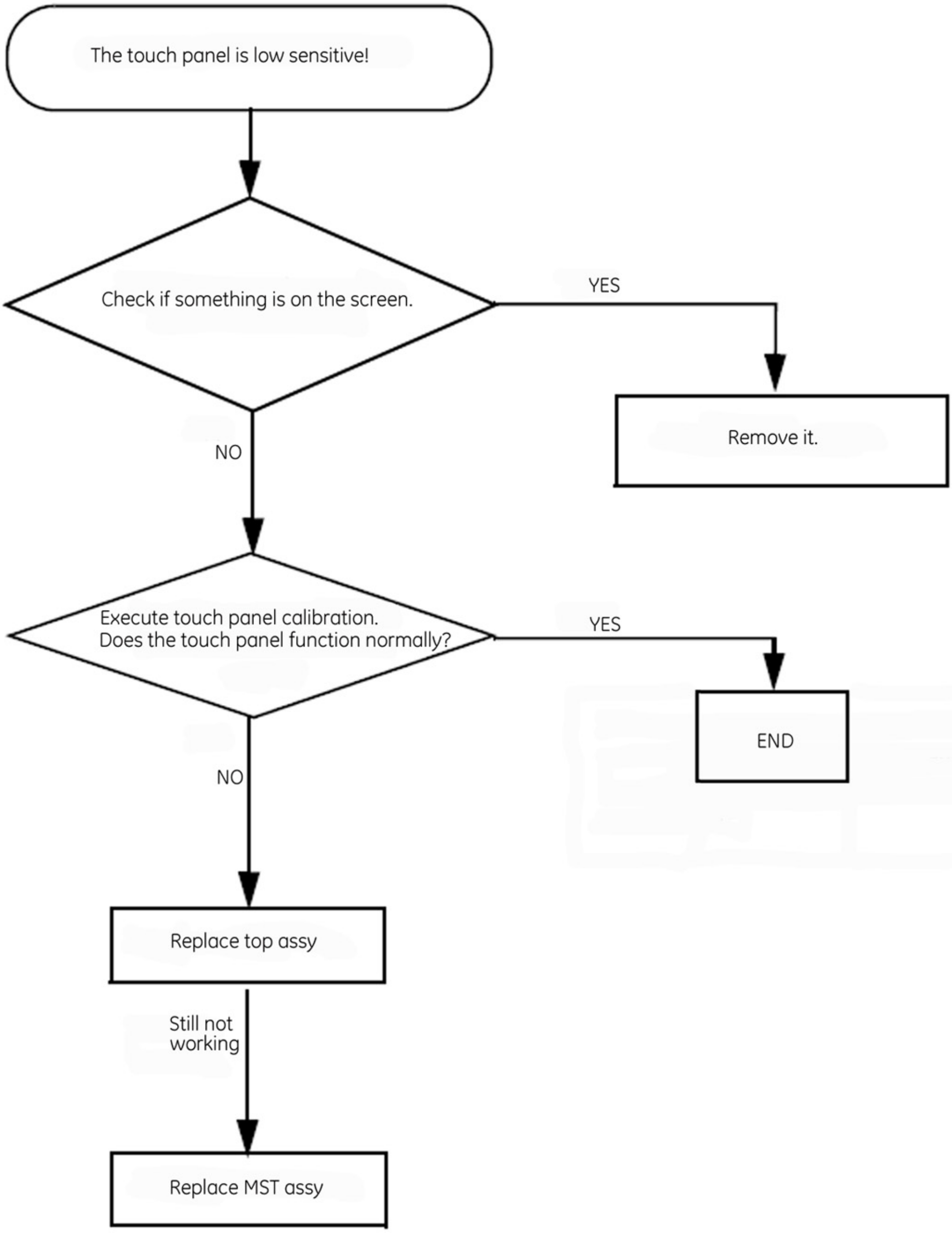

The touch panel is low sensitive!
Check if something is on the screen.
YES
Remove it.
NO
Execute touch panel calibration.
Does the touch panel function normally?
YES
END
NO
Replace top assy
Still not working
Replace MST assy

Figure 7-12. Unable to Scan

LCD Display - Impaired Function

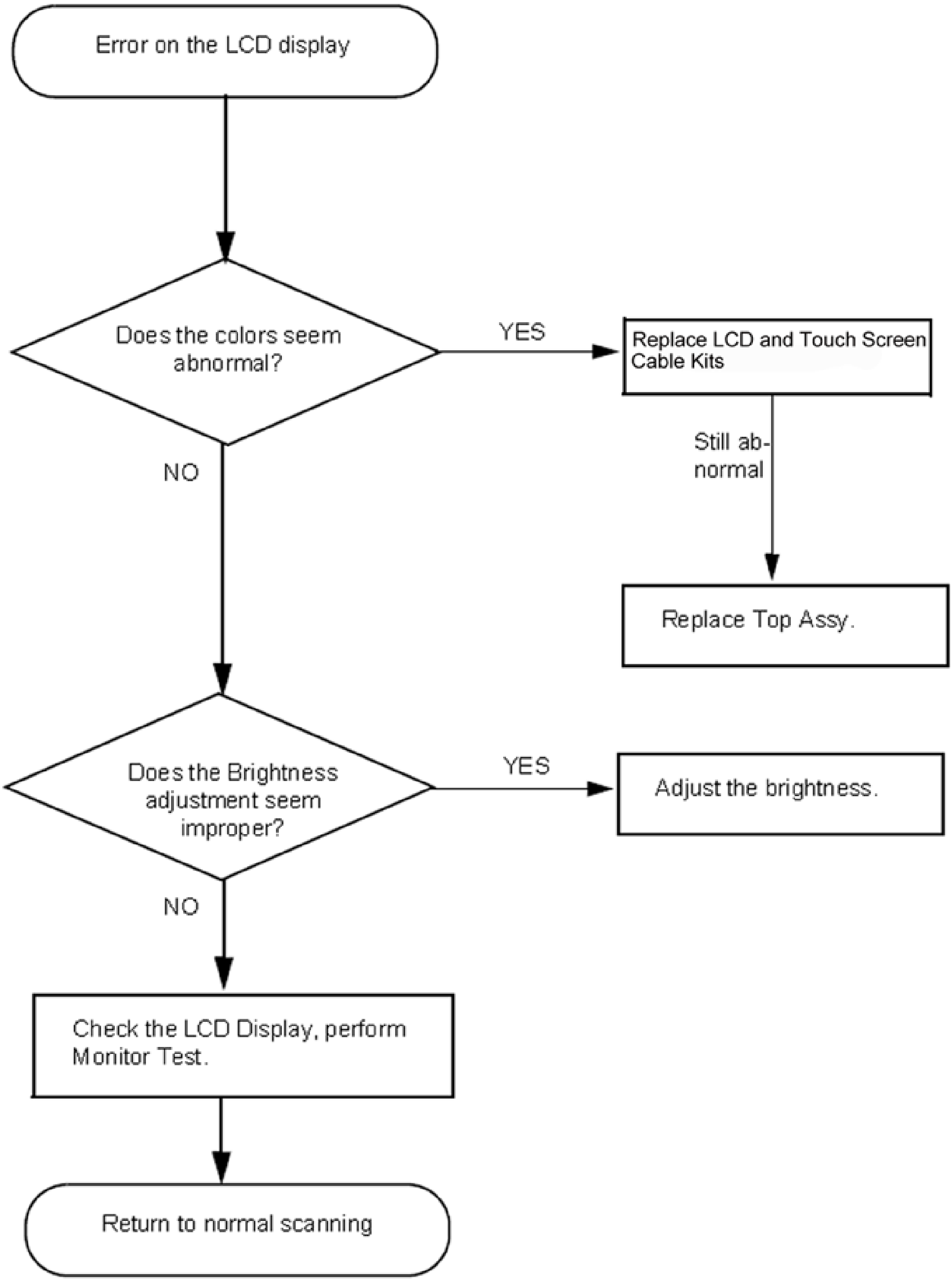

Error on the LCD display
Does the colors seem abnormal?
YES
Replace LCD and Touch Screen Cable Kits
Still ab-normal
Replace Top Assy.
NO
Does the Brightness adjustment seem improper?
YES
Adjust the brightness.
NO
Check the LCD Display, perform Monitor Test.
Return to normal scanning

Figure 7-13. LCD Display

Peripheral Troubleshooting Trees

Unable Recording by Printer

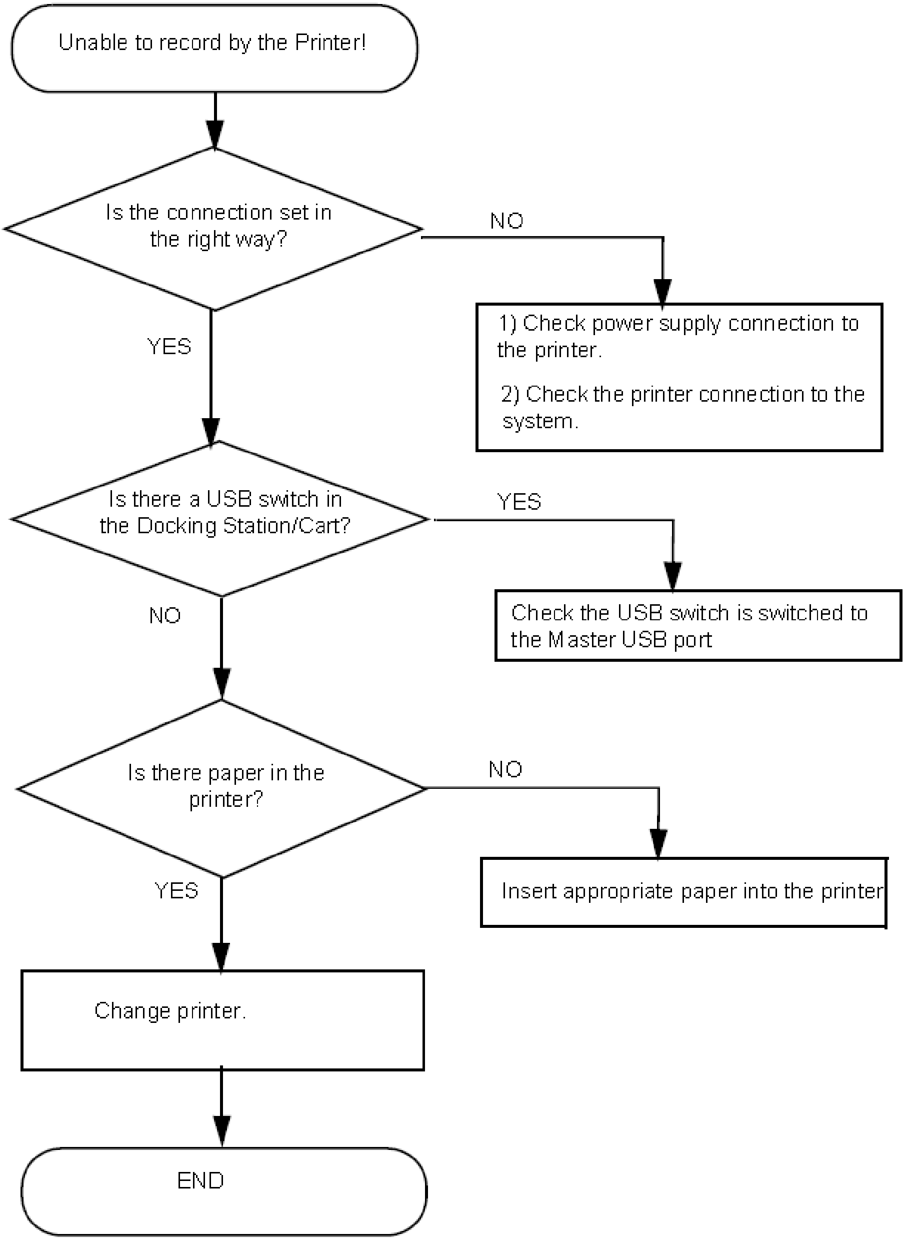

Unable to record by the Printer!
Is the connection set in the right way?
NO
1) Check power supply connection to the printer.
2) Check the printer connection to the system.
YES
Is there a USB switch in the Docking Station/Cart?
YES
Check the USB switch is switched to the Master USB port
NO
Is there paper in the printer?
NO
Insert appropriate paper into the printer
YES
Change printer.
END

Figure 7-14. Unable Recording by Printer

SD Card

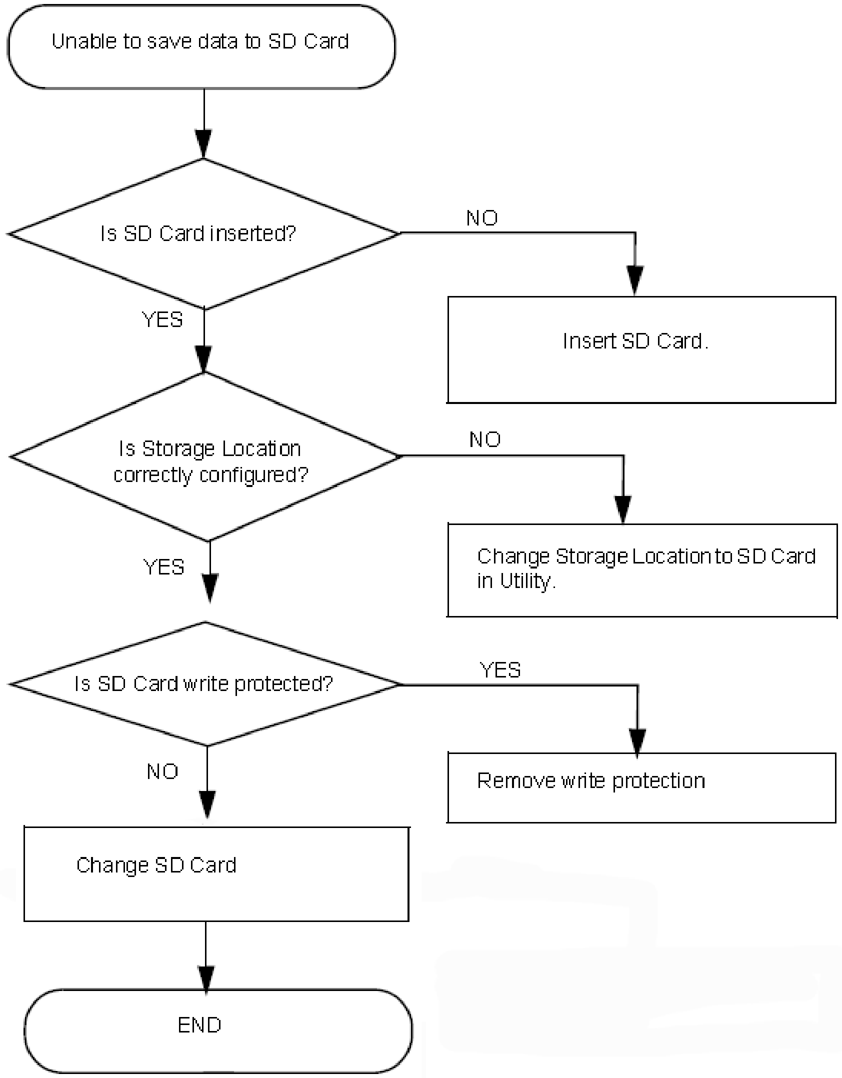

Unable to save data to SD Card
Is SD Card inserted?
NO
Insert SD Card.
YES
Is Storage Location correctly configured?
NO
Change Storage Location to SD Card in Utility.
YES
Is SD Card write protected?
YES
Remove write protection
NO
Change SD Card
END

Figure 7-15. Unable to save data to SD Card

USB Memory Stick

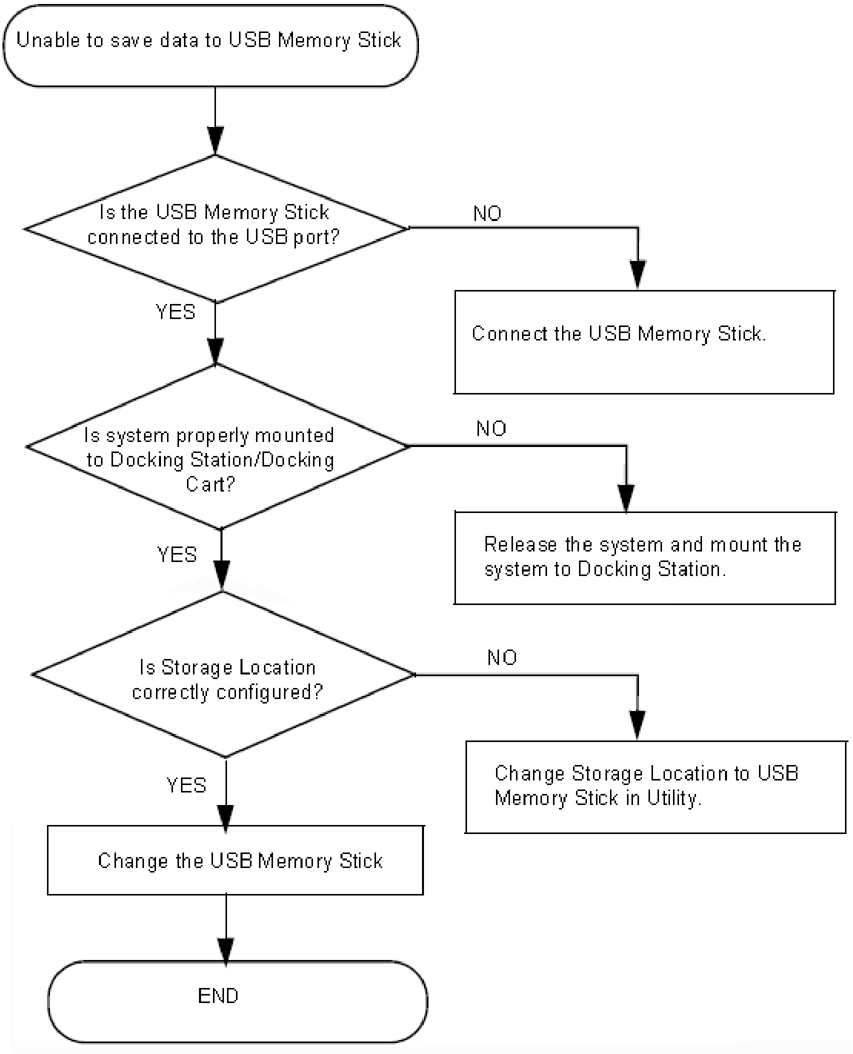

Unable to save data to USB Memory Stick
Is the USB Memory Stick connected to the USB port?
NO
Connect the USB Memory Stick.
YES
Is system properly mounted to Docking Station/Docking Cart?
NO
Release the system and mount the system to Docking Station.
YES
Is Storage Location correctly configured?
NO
Change Storage Location to USB Memory Stick in Utility.
YES
Change the USB Memory Stick
END

Figure 7-16. Unable to save data to USB Memory Stick

Battery Troubleshooting

System can’t work with battery only.

Table 7-1: Battery Troubleshooting

Num	Reason
1	Battery Broken.
2	Battery is not connected well.
3	Charger block issue, change charge board.

Remote Service

Gateway Installation

Preparations

Before installing the gateway, please assure that the computer meets the minimum requirements listed in the table below.

Table 7-2: Minimum Requirements for the computer

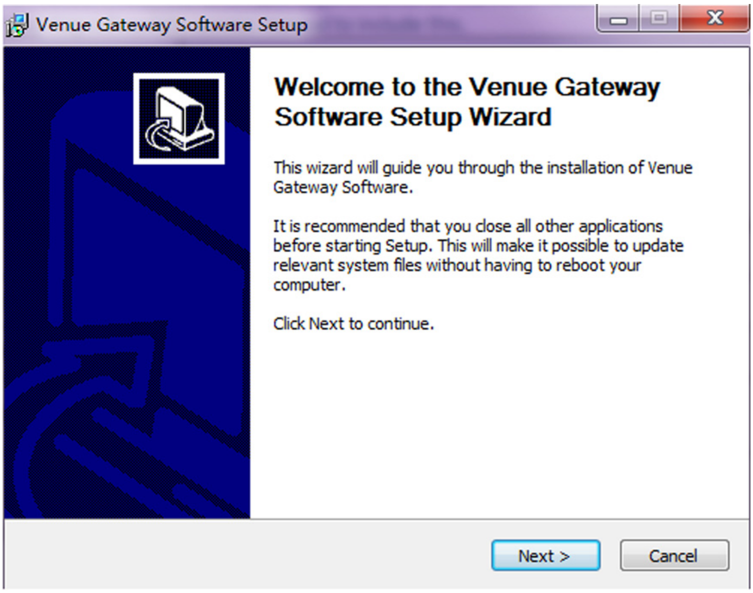
Item	Minimum Requirements
OS	Windows XP Professional SP3 Windows Vista Windows 7 32-bit and 64-bit versions are supported. Windows 7 running in VMware Virtualization Software on Mac OS X 10.6 is supported.
CPU	Pentium 4 (2.4GHz) or Pentium M (1.6GHz)
RAM	1GB
Disk space	1000MB on system partition 200MB on partition where program is installed
Graphic	DirectX 9c compatible display adapter such as: • NVIDIA GeForce 6 Series or later • AMD/ATI X1000 series or later (or Radeon R520 or later) • Inter GMA X3000 series or later Min. resolution: 1024x768
Ports	At least on USB port or SD Card Reader available
pointing device	Mouse with left and right buttons
Alphanumeric	Keyboard required
Network	Wired or Wireless network connection required

Installation Procedure

The software upgrade SDHC card contains the software Gateway. Please follow the steps to install the Gateway.

NOTE: *When installing Venue Gateway software to a computer, the gateway installer will add some items to registry and also create some shortcuts. If anti-virus software or some other software pops up tips about these actions, please allow our installer to do the changes, otherwise Venue Gateway software may not work properly.*

1. Insert the software upgrade SDHC card to the computer and double click the corresponding drive.
2. Double click **Setup.exe**. The screen is displayed as below. Press **Next**.



Welcome to the Venue Gateway Software Setup Wizard

This wizard will guide you through the installation of Venue Gateway Software.

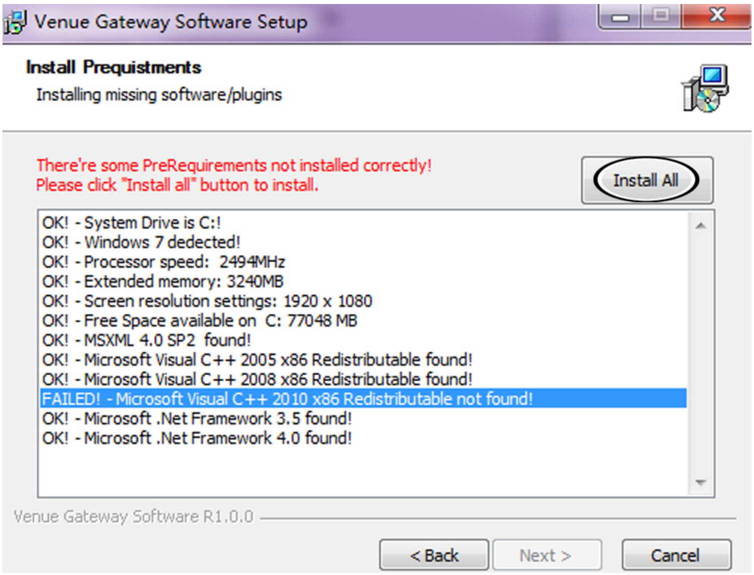
It is recommended that you close all other applications before starting Setup. This will make it possible to update relevant system files without having to reboot your computer.

Click Next to continue.

Figure 7-17. Installation Setup

Installation Procedure (continued)

3. If the computer does not meet the minimum requirements in Table 7-2, the screen is displayed as below. Press **Install All**. After all requirements are installed, press **Next**.


Venue Gateway Software Setup
Install All
< Back
Next >
Cancel
Venue Gateway Software R1.0.0

Install Prequistments

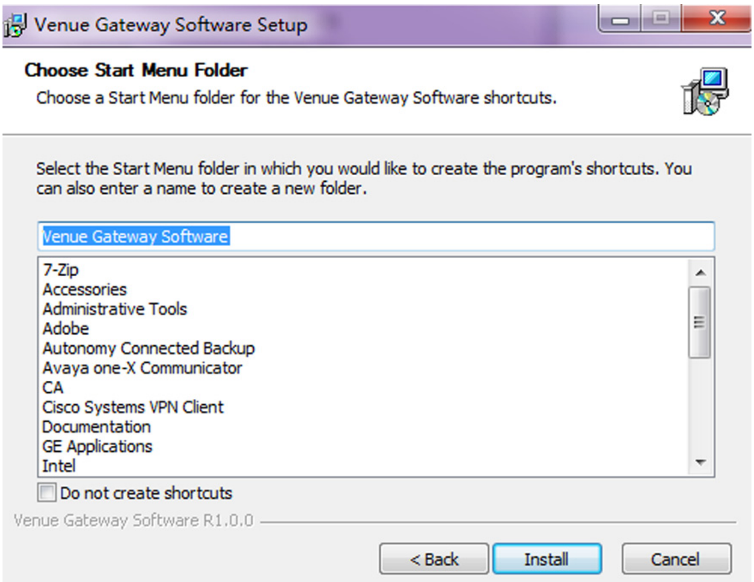
Installing missing software/plugins

There're some PreRequirements not installed correctly!
Please click "Install all" button to install.

```
OK! - System Drive is C:!
OK! - Windows 7 dedected!
OK! - Processor speed:  2494MHz
OK! - Extended memory: 3240MB
OK! - Screen resolution settings: 1920 x 1080
OK! - Free Space available on  C: 77048 MB
OK! - MSXML 4.0 SP2  found!
OK! - Microsoft Visual C++ 2005 x86 Redistributable found!
OK! - Microsoft Visual C++ 2008 x86 Redistributable found!
FAILED! - Microsoft Visual C++ 2010 x86 Redistributable not found!
OK! - Microsoft .Net Framework 3.5 found!
OK! - Microsoft .Net Framework 4.0 found!
```

Figure 7-18. Install All

4. When the screen is displayed as below, press **Install**.


Venue Gateway Software Setup
7-Zip
Accessories
Administrative Tools
Adobe
Autonomy Connected Backup
Avaya one-X Communicator
CA
Cisco Systems VPN Client
Documentation
GE Applications
Intel
Venue Gateway Software R1.0.0
< Back
Install
Cancel

Choose Start Menu Folder

Choose a Start Menu folder for the Venue Gateway Software shortcuts.

Select the Start Menu folder in which you would like to create the program's shortcuts. You can also enter a name to create a new folder.

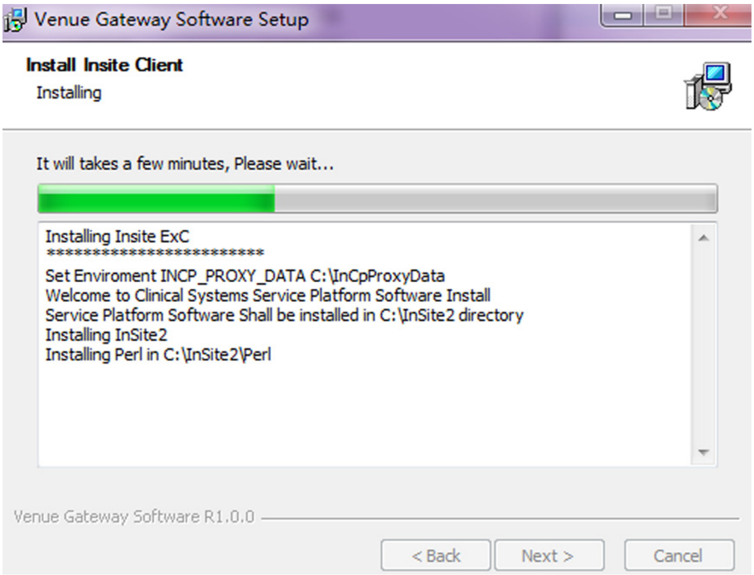
Venue Gateway Software

☐ Do not create shortcuts

Figure 7-19. Install the software

Installation Procedure (continued)

5. When the installation procedure begins, the screen is displayed as below.

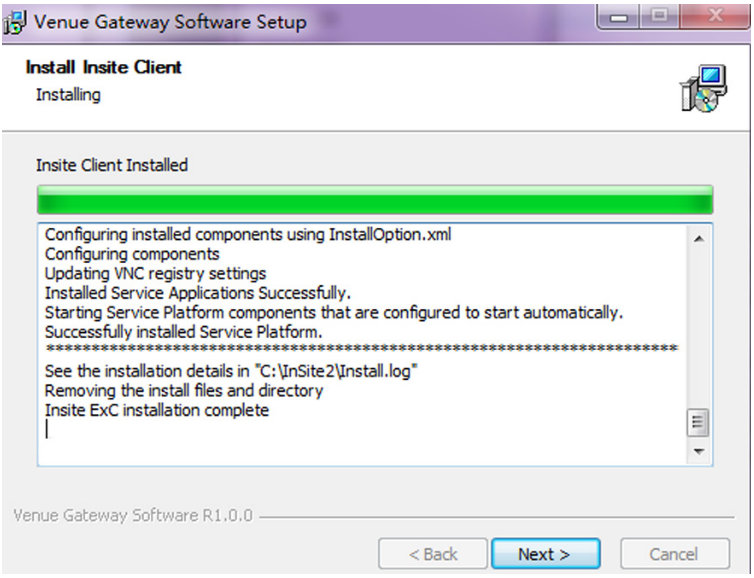

Venue Gateway Software Setup
Install Insite Client
Installing
Venue Gateway Software R1.0.0
< Back
Next >
Cancel

It will takes a few minutes, Please wait...

```
Installing Insite ExC
**************************
Set Enviroment INCP_PROXY_DATA C:\InCpProxyData
Welcome to Clinical Systems Service Platform Software Install
Service Platform Software Shall be installed in C:\InSite2 directory
Installing InSite2
Installing Perl in C:\InSite2\Perl
```

Figure 7-20. Installation Procedure

6. When the installation procedure completes, the screen is displayed as below. Press **Next**.


Venue Gateway Software Setup
Install Insite Client
Installing
Venue Gateway Software R1.0.0
< Back
Next >
Cancel

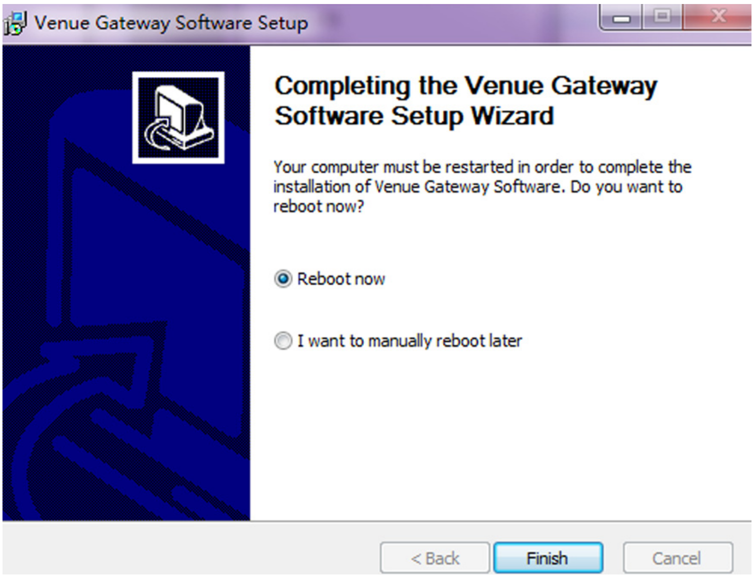
Insite Client Installed

```
Configuring installed components using InstallOption.xml
Configuring components
Updating VNC registry settings
Installed Service Applications Successfully.
Starting Service Platform components that are configured to start automatically.
Successfully installed Service Platform.
****************************************************************************
See the installation details in "C:\InSite2\Install.log"
Removing the install files and directory
Insite ExC installation complete
```

Figure 7-21. Installation Completed

Installation Procedure (continued)

7. When the screen is displayed as below, press **Finish** to reboot the computer.


Venue Gateway Software Setup

Completing the Venue Gateway Software Setup Wizard

Your computer must be restarted in order to complete the installation of Venue Gateway Software. Do you want to reboot now?

● Reboot now

○ I want to manually reboot later

< Back
Finish
Cancel

Figure 7-22. Reboot the computer

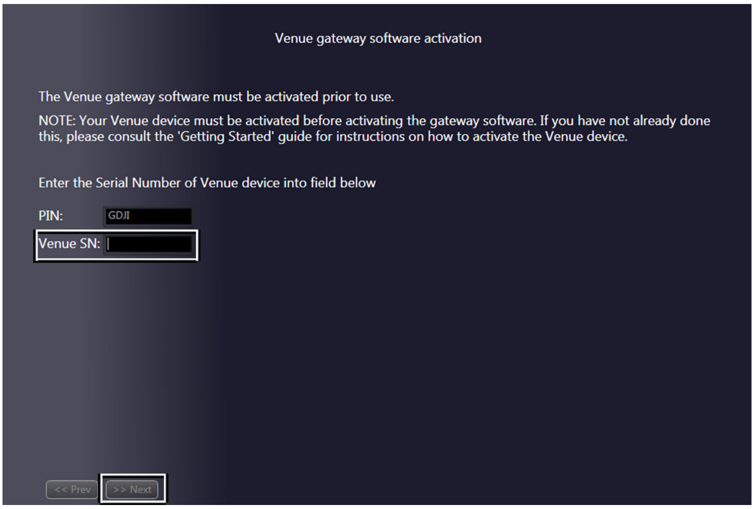
Gateway Running

Preparations

Please follow the steps below to do some configuration when the Gateway is used for the first time.

NOTE: *When you are following the steps below, please read the directions shown on the screen carefully.*

1. Double click the Venue Gateway Software icon in the customer PC.
2. Input the Serial Number of Venue device into the field. Then press **Next**.



Venue gateway software activation

The Venue gateway software must be activated prior to use.

NOTE: Your Venue device must be activated before activating the gateway software. If you have not already done this, please consult the 'Getting Started' guide for instructions on how to activate the Venue device.

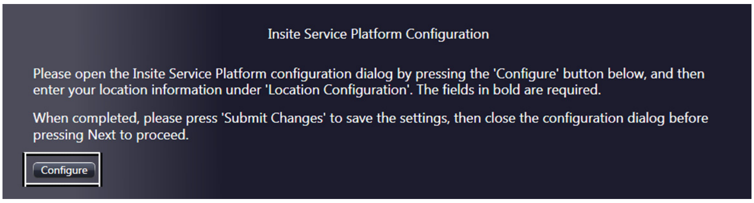
Enter the Serial Number of Venue device into field below

PIN: GDJI

Venue SN:

Figure 7-23. Input Venue SN

3. Press **Configure** to open the Insite Service Platform.



Insite Service Platform Configuration

Please open the Insite Service Platform configuration dialog by pressing the 'Configure' button below, and then enter your location information under 'Location Configuration'. The fields in bold are required.

When completed, please press 'Submit Changes' to save the settings, then close the configuration dialog before pressing Next to proceed.

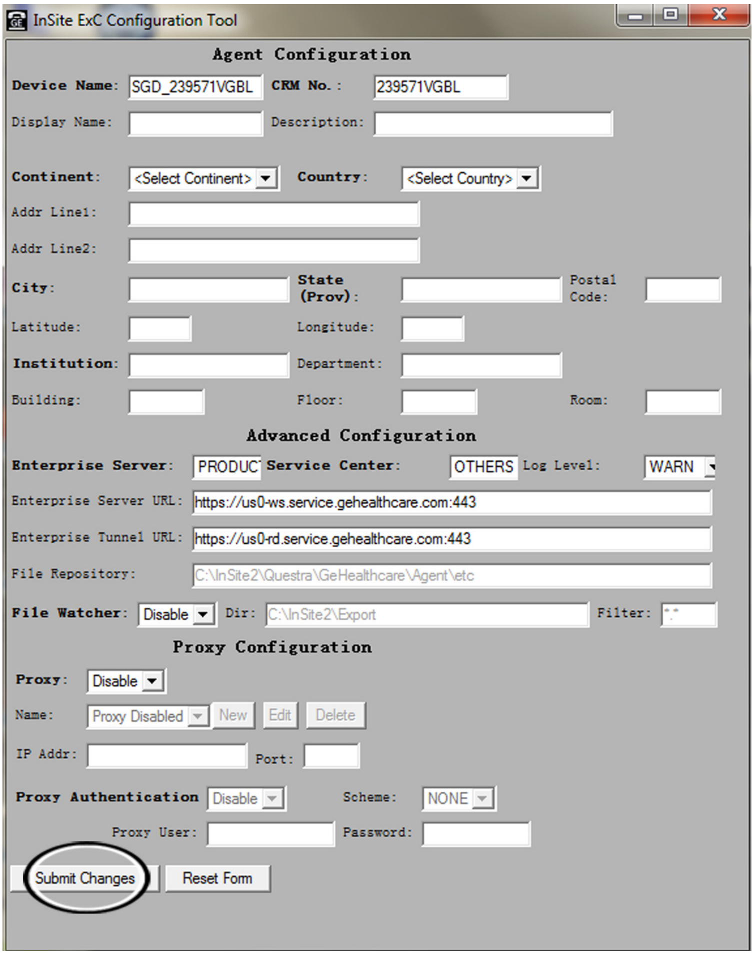
Figure 7-24. Press Configure

Preparations (continued)

4. Input the corresponding information. The fields in bold are required. Then press **Submit Changes**.

NOTE: ***Device Name** and **CRM No.** are automatically filled in. Do not need to modify the information.*

NOTE: *The operator does not need to modify the fields in **Advanced Configuration**.*



InSite ExC Configuration Tool

Agent Configuration

Device Name: SGD_239571VGBL **CRM No.:** 239571VGBL

Display Name: Description:

Continent: <Select Continent> **Country:** <Select Country>

Addr Line1:

Addr Line2:

City: **State (Prov):** Postal Code:

Latitude: Longitude:

Institution: Department:

Building: Floor: Room:

Advanced Configuration

Enterprise Server: PRODUC **Service Center:** OTHERS Log Level: WARN

Enterprise Server URL: https://us0-ws.service.gehealthcare.com:443

Enterprise Tunnel URL: https://us0-rd.service.gehealthcare.com:443

File Repository: C:\InSite2\Questra\GeHealthcare\Agent\etc

File Watcher: Disable Dir: C:\InSite2\Export Filter: *.*

Proxy Configuration

Proxy: Disable

Name: Proxy Disabled

IP Addr: Port:

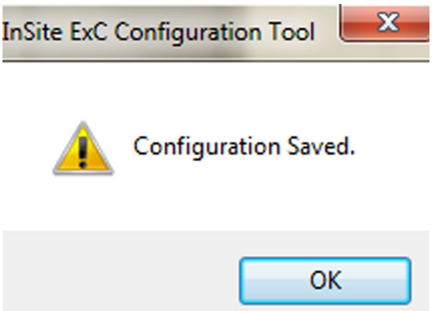
Proxy Authentication Disable Scheme: NONE

Proxy User: Password:

Figure 7-25. Insite Service Platform Configuration

Preparations (continued)

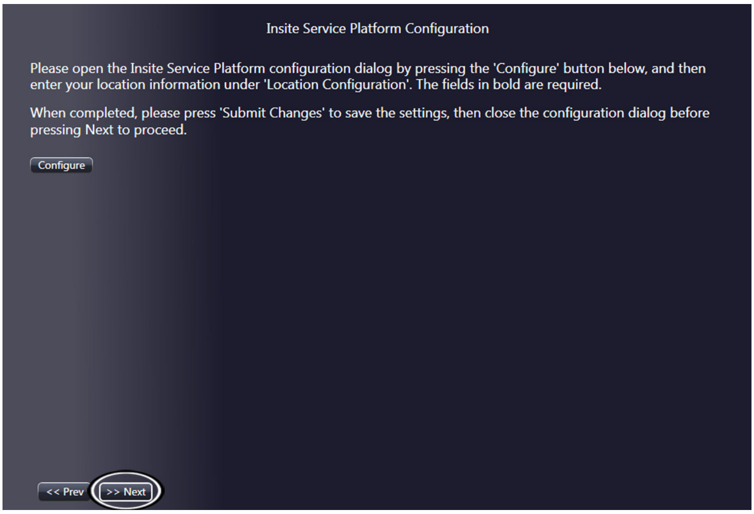
5. When the configuration is saved. Press **OK**. Then close the configuration screen.



Configuration Saved.

Figure 7-26. Configuration Saved

6. Press **Next** to run the Gateway.



Insite Service Platform Configuration

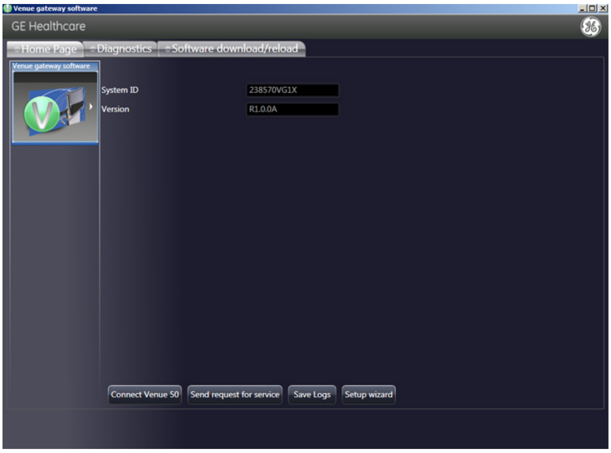
Please open the Insite Service Platform configuration dialog by pressing the 'Configure' button below, and then enter your location information under 'Location Configuration'. The fields in bold are required.

When completed, please press 'Submit Changes' to save the settings, then close the configuration dialog before pressing Next to proceed.

Figure 7-27. Run Gateway

Gateway Running Procedure

1. Run Gateway by double clicking **Gateway** in the customer PC.


Venue gateway software
GE Healthcare
Home Page
Diagnostics
Software download/reload
Venue gateway software
Connect Venue 50
Send request for service
Save Logs
Setup wizard

System ID 238570VG1X
Version R1.0.0A

Figure 7-28. Run Gateway

2. Select **Start Remote Desktop Service** at the lower right corner.

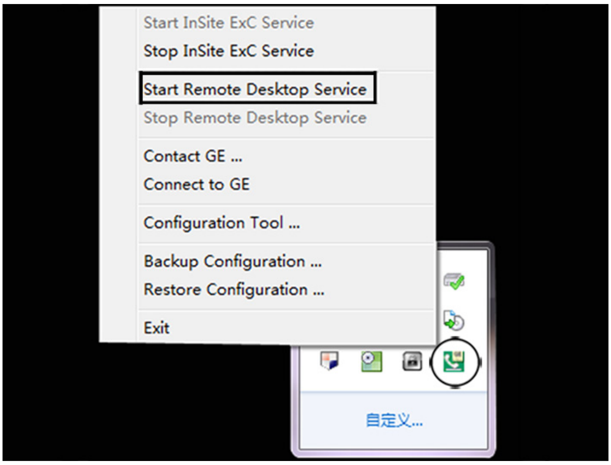

Start InSite ExC Service
Stop InSite ExC Service
Start Remote Desktop Service
Stop Remote Desktop Service
Contact GE ...
Connect to GE
Configuration Tool ...
Backup Configuration ...
Restore Configuration ...
Exit
自定义...

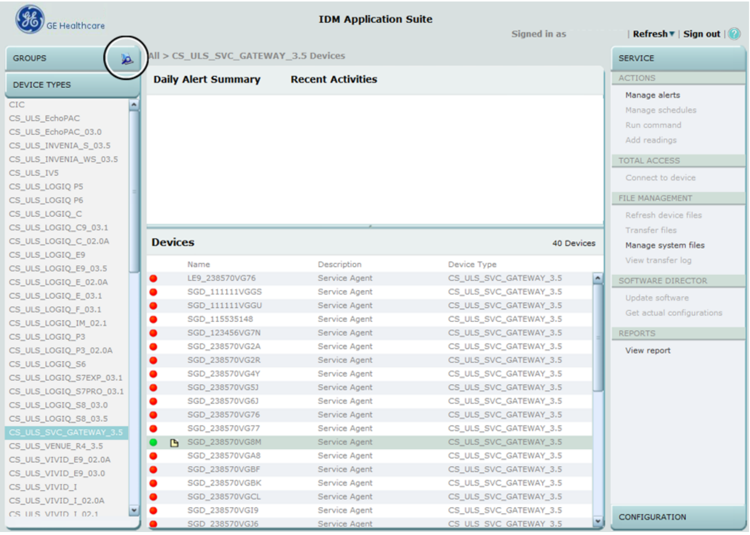
Figure 7-29. Start Remote Desktop Service

Remote Software Download/Reload

To download/reload the software packages, please follow the steps as below:

1. Access to https://insite2.health.ge.com/qss/gelogin.jsp.
2. Select **Device Type**, find the customer PC. Or click **Search** , then input some information to find the customer PC.

NOTE: *You may review and check if the customer PC is the right one by click **Device Profile Dialog** Icon.*


GE Healthcare
IDM Application Suite
Signed in as
Refresh | Sign out
GROUPS
DEVICE TYPES
CIC
CS_ULS_EchoPAC
CS_ULS_EchoPAC_03.0
CS_ULS_INVENIA_S_03.5
CS_ULS_INVENIA_WS_03.5
CS_ULS_IV5
CS_ULS_LOGIQ P5
CS_ULS_LOGIQ P6
CS_ULS_LOGIQ_C
CS_ULS_LOGIQ_C9_03.1
CS_ULS_LOGIQ_C_02.0A
CS_ULS_LOGIQ_E9
CS_ULS_LOGIQ_E9_03.5
CS_ULS_LOGIQ_E_02.0A
CS_ULS_LOGIQ_E_03.1
CS_ULS_LOGIQ_F_03.1
CS_ULS_LOGIQ_IM_02.1
CS_ULS_LOGIQ_P3
CS_ULS_LOGIQ_P3_02.0A
CS_ULS_LOGIQ_S6
CS_ULS_LOGIQ_S7EXP_03.1
CS_ULS_LOGIQ_S7PRO_03.1
CS_ULS_LOGIQ_S8_03.0
CS_ULS_LOGIQ_S8_03.5
CS_ULS_SVC_GATEWAY_3.5
CS_ULS_VENUE_R4_3.5
CS_ULS_VIVID_E9_02.0A
CS_ULS_VIVID_E9_03.0
CS_ULS_VIVID_I
CS_ULS_VIVID_I_02.0A
CS_ULS_VIVID_I_02.1
All > CS_ULS_SVC_GATEWAY_3.5 Devices
Daily Alert Summary
Recent Activities
SERVICE
ACTIONS
Manage alerts
Manage schedules
Run command
Add readings
TOTAL ACCESS
Connect to device
FILE MANAGEMENT
Refresh device files
Transfer files
Manage system files
View transfer log
SOFTWARE DIRECTOR
Update software
Get actual configurations
REPORTS
View report
CONFIGURATION

Devices 40 Devices

	Name	Description	Device Type
●	LE9_238570VG76	Service Agent	CS_ULS_SVC_GATEWAY_3.5
●	SGD_111111VGGS	Service Agent	CS_ULS_SVC_GATEWAY_3.5
●	SGD_111111VGGU	Service Agent	CS_ULS_SVC_GATEWAY_3.5
●	SGD_115535148	Service Agent	CS_ULS_SVC_GATEWAY_3.5
●	SGD_123456VG7N	Service Agent	CS_ULS_SVC_GATEWAY_3.5
●	SGD_238570VG2A	Service Agent	CS_ULS_SVC_GATEWAY_3.5
●	SGD_238570VG2R	Service Agent	CS_ULS_SVC_GATEWAY_3.5
●	SGD_238570VG4Y	Service Agent	CS_ULS_SVC_GATEWAY_3.5
●	SGD_238570VG5J	Service Agent	CS_ULS_SVC_GATEWAY_3.5
●	SGD_238570VG6J	Service Agent	CS_ULS_SVC_GATEWAY_3.5
●	SGD_238570VG76	Service Agent	CS_ULS_SVC_GATEWAY_3.5
●	SGD_238570VG77	Service Agent	CS_ULS_SVC_GATEWAY_3.5
●	SGD_238570VG8M	Service Agent	CS_ULS_SVC_GATEWAY_3.5
●	SGD_238570VGA8	Service Agent	CS_ULS_SVC_GATEWAY_3.5
●	SGD_238570VGBF	Service Agent	CS_ULS_SVC_GATEWAY_3.5
●	SGD_238570VGBK	Service Agent	CS_ULS_SVC_GATEWAY_3.5
●	SGD_238570VGCL	Service Agent	CS_ULS_SVC_GATEWAY_3.5
●	SGD_238570VGI9	Service Agent	CS_ULS_SVC_GATEWAY_3.5
●	SGD_238570VGJ6	Service Agent	CS_ULS_SVC_GATEWAY_3.5

Figure 7-30. Search Customer PC

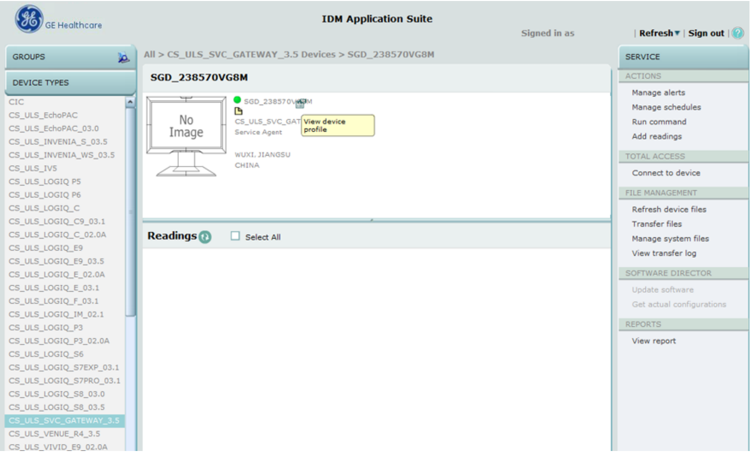
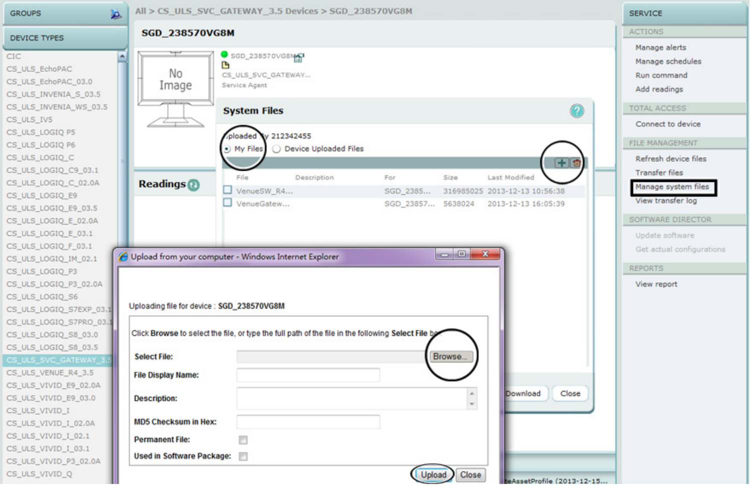

GE Healthcare
IDM Application Suite
Signed in as
Refresh | Sign out
GROUPS
DEVICE TYPES
CIC
CS_ULS_EchoPAC
CS_ULS_EchoPAC_03.0
CS_ULS_INVENIA_S_03.5
CS_ULS_INVENIA_WS_03.5
CS_ULS_IV5
CS_ULS_LOGIQ P5
CS_ULS_LOGIQ P6
CS_ULS_LOGIQ_C
CS_ULS_LOGIQ_C9_03.1
CS_ULS_LOGIQ_C_02.0A
CS_ULS_LOGIQ_E9
CS_ULS_LOGIQ_E9_03.5
CS_ULS_LOGIQ_E_02.0A
CS_ULS_LOGIQ_E_03.1
CS_ULS_LOGIQ_F_03.1
CS_ULS_LOGIQ_IM_02.1
CS_ULS_LOGIQ_P3
CS_ULS_LOGIQ_P3_02.0A
CS_ULS_LOGIQ_S6
CS_ULS_LOGIQ_S7EXP_03.1
CS_ULS_LOGIQ_S7PRO_03.1
CS_ULS_LOGIQ_S8_03.0
CS_ULS_LOGIQ_S8_03.5
CS_ULS_SVC_GATEWAY_3.5
CS_ULS_VENUE_R4_3.5
CS_ULS_VIVID_E9_02.0A
All > CS_ULS_SVC_GATEWAY_3.5 Devices > SGD_238570VG8M
SGD_238570VG8M
No Image
SGD_238570V
CS_ULS_SVC_GAT
Service Agent
View device profile
WUXI. JIANGSU
CHINA
Readings
☐ Select All
SERVICE
ACTIONS
Manage alerts
Manage schedules
Run command
Add readings
TOTAL ACCESS
Connect to device
FILE MANAGEMENT
Refresh device files
Transfer files
Manage system files
View transfer log
SOFTWARE DIRECTOR
Update software
Get actual configurations
REPORTS
View report

Figure 7-31. View Device Profile

Remote Software Download/Reload (continued)

3. To upload the software to the website, select the customer PC, press **Manage System Files**, selece My File, click **+** to select the desired software package, press **Upload**. The software package is uploaded to the website.


GROUPS
DEVICE TYPES
All > CS_ULS_SVC_GATEWAY_3.5 Devices > SGD_238570VG8M
SGD_238570VG8M
No Image
System Files
My Files
Device Uploaded Files
File
Description
For
Size
Last Modified
VenueSW_R4...
VenueGatew...
Readings
SERVICE
ACTIONS
Manage alerts
Manage schedules
Run command
Add readings
TOTAL ACCESS
Connect to device
FILE MANAGEMENT
Refresh device files
Transfer files
Manage system files
View transfer log
SOFTWARE DIRECTOR
Update software
Get actual configurations
REPORTS
View report
Upload from your computer - Windows Internet Explorer
Select File:
Browse...
File Display Name:
Description:
MD5 Checksum in Hex:
Permanent File:
Used in Software Package:
Upload
Close
Download

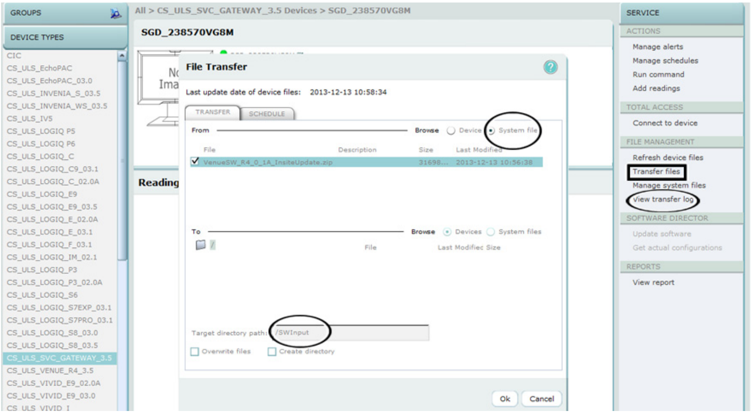
Uploading file for device : SGD_238570VG8M

Click Browse to select the file, or type the full path of the file in the following Select File box

Figure 7-32. Upload the software package

4. To download the software from the website to the customer PC, go to **Transfer File** -> **System File** to find the desired software package, then input **/SWInput** to the target directory path.

NOTE: *The download process will take some time. Please press **View Transfer Log** to check if the software has been downloaded successfully.*


GROUPS
DEVICE TYPES
All > CS_ULS_SVC_GATEWAY_3.5 Devices > SGD_238570VG8M
SGD_238570VG8M
File Transfer
TRANSFER
SCHEDULE
From
Browse
Device
System file
File
Description
Size
Last Modified
To
Devices
System files
Last Modified
Overwrite files
Create directory
Ok
Cancel
Reading
SERVICE
ACTIONS
Manage alerts
Manage schedules
Run command
Add readings
TOTAL ACCESS
Connect to device
FILE MANAGEMENT
Refresh device files
Transfer files
Manage system files
View transfer log
SOFTWARE DIRECTOR
Update software
Get actual configurations
REPORTS
View report

Last update date of device files: 2013-12-13 10:58:34

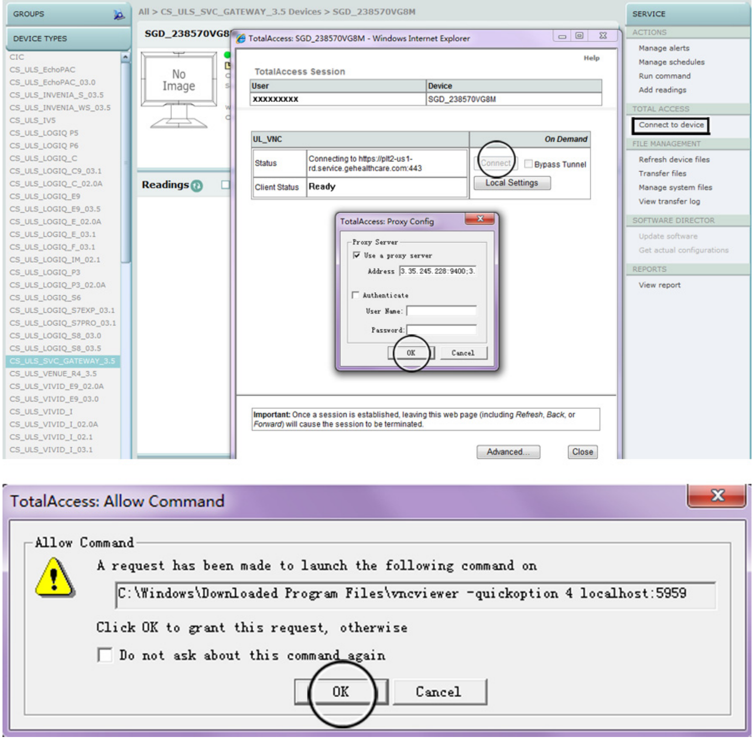
☑ VenueSW_R4_0_1A_InsiteUpdate.zip 31698... 2013-12-13 10:56:38

Target directory path: /SWInput

Figure 7-33. Download the software package

Remote Software Download/Reload (continued)

5. Select **Connect to device**. Click **Connect**, **OK**, **OK**, then the customer PC screen will show.


GROUPS
DEVICE TYPES
All > CS_ULS_SVC_GATEWAY_3.5 Devices > SGD_238570VG8M
SGD_238570VG8
No Image
Readings
SERVICE
ACTIONS
Manage alerts
Manage schedules
Run command
Add readings
TOTAL ACCESS
Connect to device
FILE MANAGEMENT
Refresh device files
Transfer files
Manage system files
View transfer log
SOFTWARE DIRECTOR
Update software
Get actual configurations
REPORTS
View report
TotalAccess: SGD_238570VG8M - Windows Internet Explorer
Help
Connect
Bypass Tunnel
Local Settings
TotalAccess: Proxy Config
OK
Cancel
Advanced...
Close
TotalAccess: Allow Command
OK
Cancel

TotalAccess Session

User	Device
xxxxxxxxx	SGD_238570VG8M

UL_VNC	
Status	Connecting to https://plt2-us1-rd.service.gehealthcare.com:443
Client Status	Ready

On Demand

Proxy Server
☑ Use a proxy server
Address 3.35.245.228:9400;3.
☐ Authenticate
User Name:
Password:

Important: Once a session is established, leaving this web page (including *Refresh*, *Back*, or *Forward*) will cause the session to be terminated.

Allow Command

A request has been made to launch the following command on

C:\Windows\Downloaded Program Files\vncviewer -quickoption 4 localhost:5959

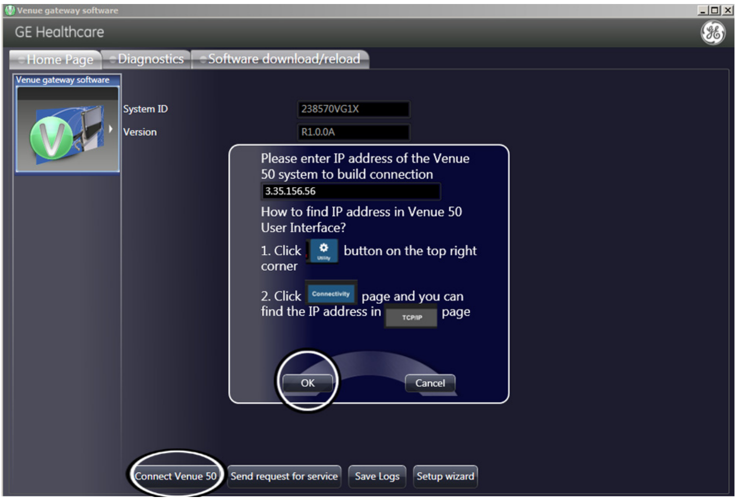
Click OK to grant this request, otherwise

☐ Do not ask about this command again

Figure 7-34. Connect to Customer device

Remote Software Download/Reload (continued)

6. Go to **Homepage**->**Venue Gateway Software**->**Connect Venue 50**, then input the Console IP Address and click **Ok**.


Venue gateway software
GE Healthcare
Home Page
Diagnostics
Software download/reload
Venue gateway software
OK
Cancel
Connect Venue 50
Send request for service
Save Logs
Setup wizard

System ID 238570VG1X

Version R1.0.0A

Please enter IP address of the Venue 50 system to build connection

3.35.156.56

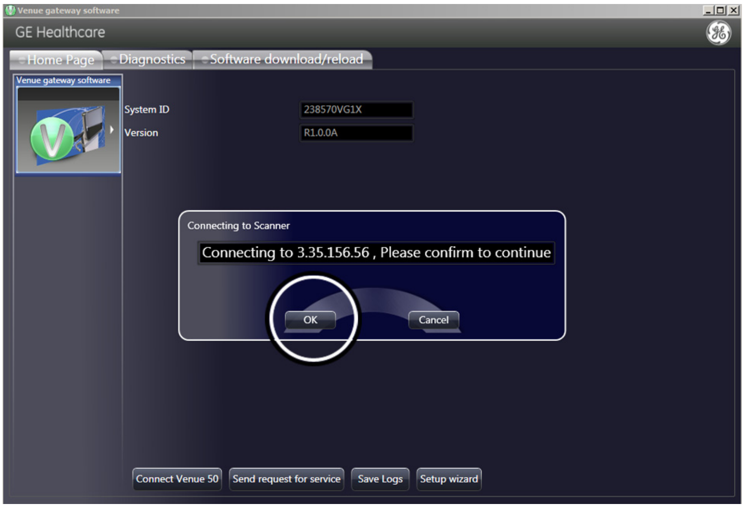
How to find IP address in Venue 50 User Interface?

1. Click Utility button on the top right corner

2. Click Connectivity page and you can find the IP address in TCP/IP page

Figure 7-35. Input Scanner IP

7. When the figure below appears, press **OK**.


Venue gateway software
GE Healthcare
Home Page
Diagnostics
Software download/reload
Venue gateway software
OK
Cancel
Connect Venue 50
Send request for service
Save Logs
Setup wizard

System ID 238570VG1X

Version R1.0.0A

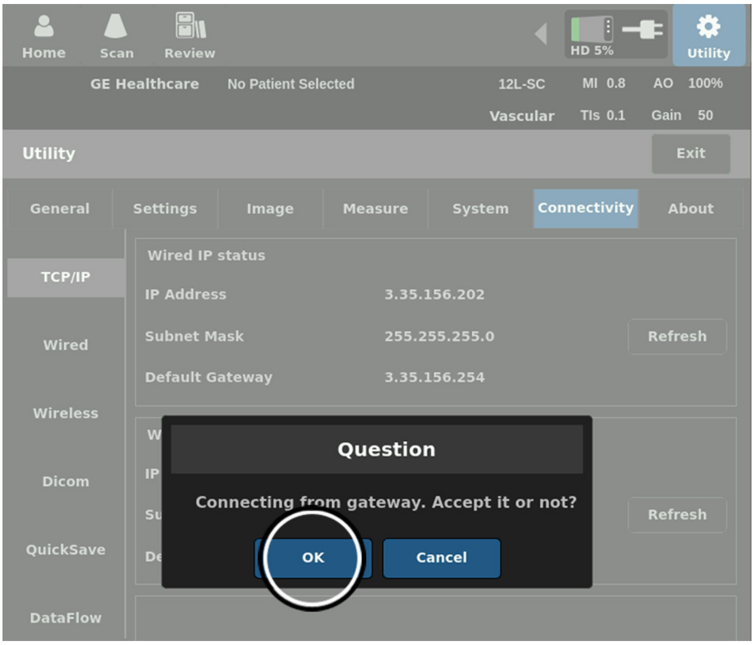
Connecting to Scanner

Connecting to 3.35.156.56 , Please confirm to continue

Figure 7-36. Connect to Scanner

Remote Software Download/Reload (continued)

8. The customer press **OK** on the console.



Home
Scan
Review
HD 5%
Utility
GE Healthcare
No Patient Selected
12L-SC
Vascular
MI 0.8
TIs 0.1
AO 100%
Gain 50
Utility
Exit
General
Settings
Image
Measure
System
Connectivity
About
TCP/IP
Wired
Wireless
Dicom
QuickSave
DataFlow
Refresh
Refresh
OK
Cancel

Wired IP status

IP Address 3.35.156.202

Subnet Mask 255.255.255.0

Default Gateway 3.35.156.254

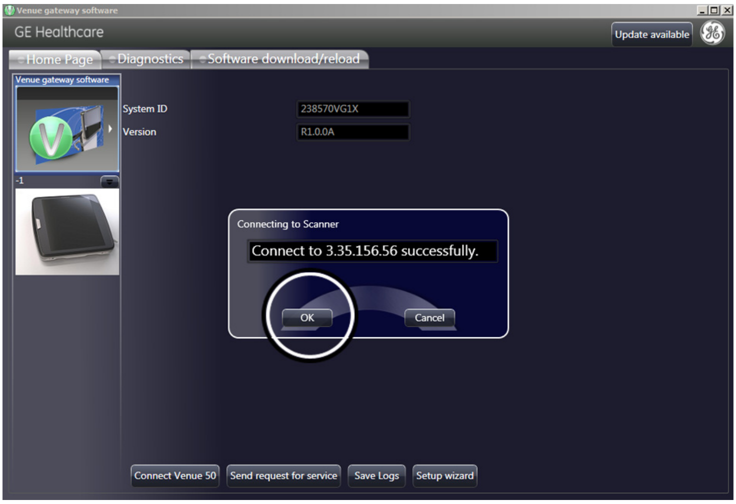
Question

Connecting from gateway. Accept it or not?

Figure 7-37. Scanner Connected

*NOTE: Press **OK** as soon as possible once the box appears.*

9. When the figure below appears, press **OK**. Then the customer PC is connected to the console.



Venue gateway software
GE Healthcare
Update available
Home Page
Diagnostics
Software download/reload
Venue gateway software
-1
OK
Cancel
Connect Venue 50
Send request for service
Save Logs
Setup wizard

System ID 238570VG1X

Version R1.0.0A

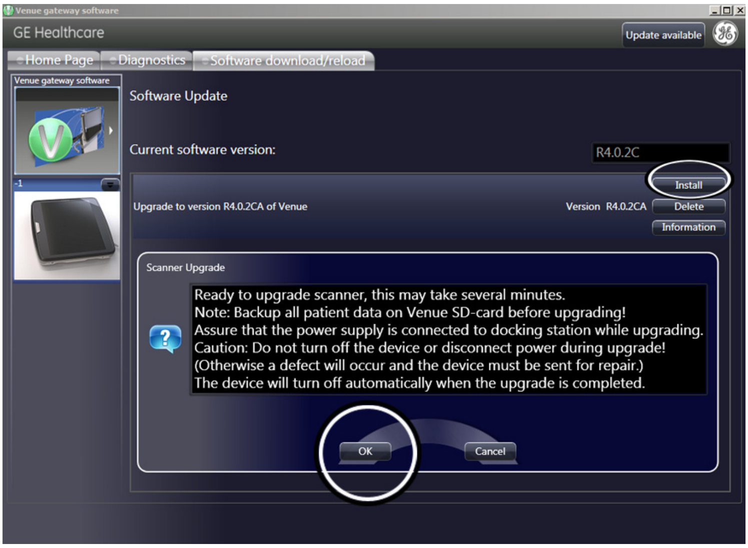
Connecting to Scanner

Connect to 3.35.156.56 successfully.

Figure 7-38. PC Connected

Remote Software Download/Reload (continued)

10. Press **Software download/reload**, select the console, select the desired software package, press **Install** / **Reinstall**. When a dialogue box appears, press **OK**. .


Venue gateway software
GE Healthcare
Update available
Home Page
Diagnostics
Software download/reload
Venue gateway software
Install
Delete
Information
Scanner Upgrade
OK
Cancel

Software Update

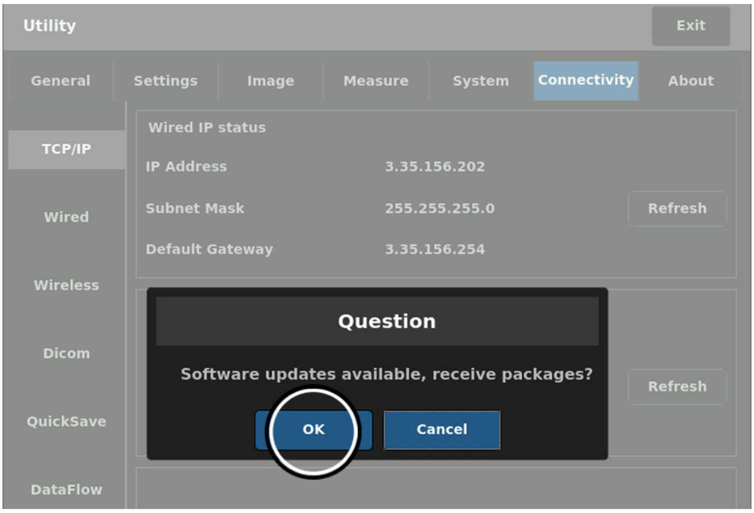
Current software version: R4.0.2C

Upgrade to version R4.0.2CA of Venue Version R4.0.2CA

Ready to upgrade scanner, this may take several minutes.
Note: Backup all patient data on Venue SD-card before upgrading!
Assure that the power supply is connected to docking station while upgrading.
Caution: Do not turn off the device or disconnect power during upgrade!
(Otherwise a defect will occur and the device must be sent for repair.)
The device will turn off automatically when the upgrade is completed.

Figure 7-39. Software Installed

11. When the figure below appears on the scanner, press **OK** to receive package. The installation process begins.


Utility
Exit
General
Settings
Image
Measure
System
Connectivity
About
TCP/IP
Wired
Wireless
Dicom
QuickSave
DataFlow
Refresh
Refresh
Question
OK
Cancel

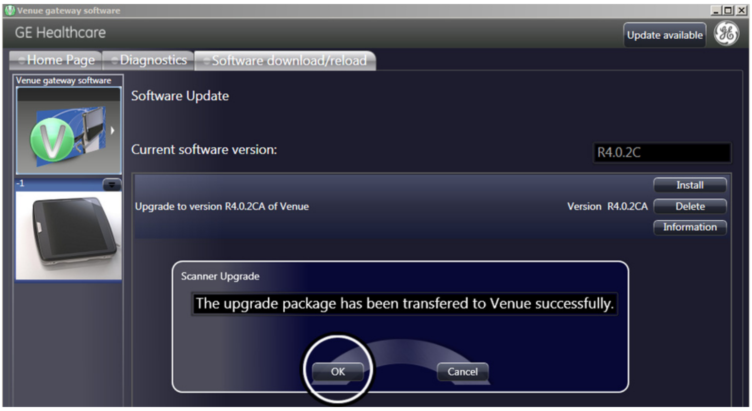
Wired IP status
IP Address 3.35.156.202
Subnet Mask 255.255.255.0
Default Gateway 3.35.156.254

Software updates available, receive packages?

Figure 7-40. Installation Process

Remote Software Download/Reload (continued)

12. After the installation process is completed, a dialogue box will appear on the PC screen. Press **OK**.


Venue gateway software
GE Healthcare
Update available
Home Page
Diagnostics
Software download/reload
Venue gateway software
-1
Install
Delete
Information
OK
Cancel

Software Update

Current software version: R4.0.2C

Upgrade to version R4.0.2CA of Venue

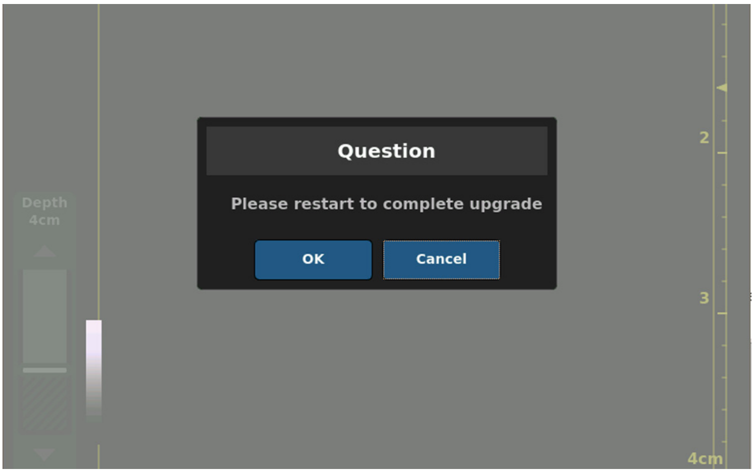
Version R4.0.2CA

Scanner Upgrade

The upgrade package has been transfered to Venue successfully.

Figure 7-41. Installation Completed

13. After the installation process is finished, a dialogue box will appear on the scanner. Press **OK** to shut down the system. Reboot to upgrade the system.


Depth
4cm
2
3
4cm
OK
Cancel

Question

Please restart to complete upgrade

Figure 7-42. System Shutdown

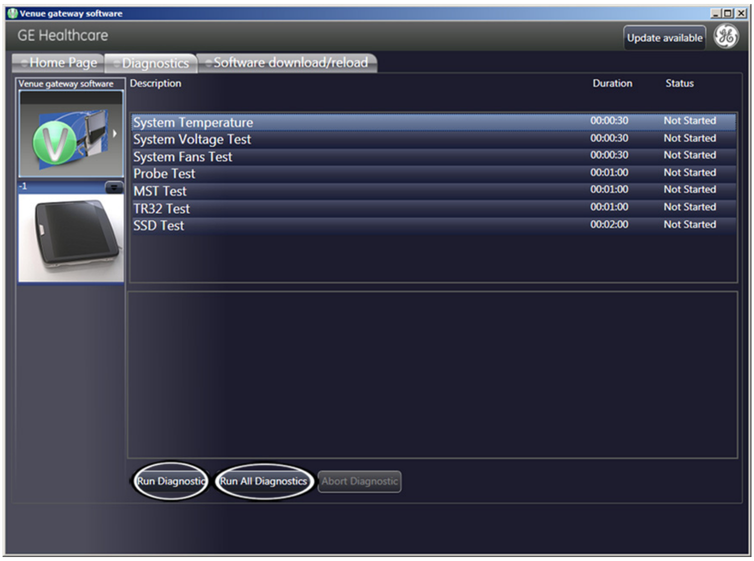
Remote Diagnostics

To diagnose the customer console, please follow the steps as below:

1. Access to https://insite2.health.ge.com/qss/gelogin.jsp.
2. Select **Device Type**, find the customer PC. Or click **Search** , then input some information to find the customer PC.

NOTE: *You may review and check if the customer PC is the right one by click **Device Profile Dialog** Icon.*

3. Select **Connect to device**. Click **Connect**, **OK**, **OK**, then the customer PC screen will show.
4. Go to **Homepage**->**Venue Gateway Software**->**Connect Venue 50**, then input the Console IP Address and click **Ok**. The customer press **OK** on the console. Then the customer PC is connected to the console.
5. Press **Diagnostics**, select the console, then press **Run All Diagnostics** or select the desired test and press **Run Diagnostics**. The summary will show on the screen.


Venue gateway software
GE Healthcare
Update available
Home Page
Diagnostics
Software download/reload
Venue gateway software
-1
Run Diagnostic
Run All Diagnostics
Abort Diagnostic

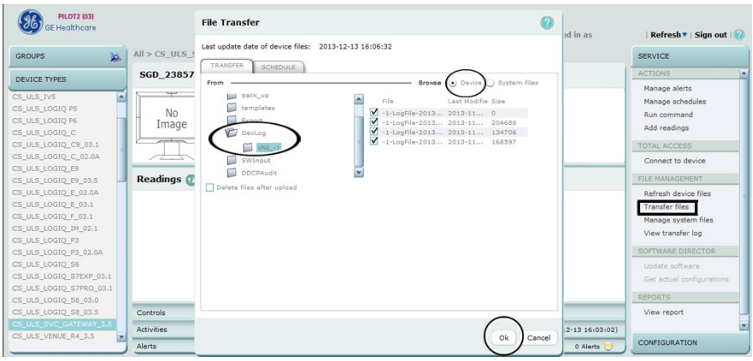
Description	Duration	Status
System Temperature	00:00:30	Not Started
System Voltage Test	00:00:30	Not Started
System Fans Test	00:00:30	Not Started
Probe Test	00:01:00	Not Started
MST Test	00:01:00	Not Started
TR32 Test	00:01:00	Not Started
SSD Test	00:02:00	Not Started

Figure 7-43. Diagnostics Screen

Remote Log

To get the log from the customer console, please follow the steps as below:

1. Access to https://insite2.health.ge.com/qss/gelogin.jsp.
2. Go to **Transfer Files** -> **Device** -> **Devlog** -> the customer console name, select log file and press **OK**.


PILOT2 (03)
GE Healthcare
GROUPS
DEVICE TYPES
CS_ULS_IV5
CS_ULS_LOGIQ P5
CS_ULS_LOGIQ P6
CS_ULS_LOGIQ_C
CS_ULS_LOGIQ_C9_03.1
CS_ULS_LOGIQ_C_02.0A
CS_ULS_LOGIQ_E9
CS_ULS_LOGIQ_E9_03.5
CS_ULS_LOGIQ_E_02.0A
CS_ULS_LOGIQ_E_03.1
CS_ULS_LOGIQ_F_03.1
CS_ULS_LOGIQ_IM_02.1
CS_ULS_LOGIQ_P3
CS_ULS_LOGIQ_P3_02.0A
CS_ULS_LOGIQ_S6
CS_ULS_LOGIQ_S7EXP_03.1
CS_ULS_LOGIQ_S7PRO_03.1
CS_ULS_LOGIQ_S8_03.0
CS_ULS_LOGIQ_S8_03.5
CS_ULS_SVC_GATEWAY_3.5
CS_ULS_VENUE_R4_3.5
All > CS_ULS_
SGD_23857
No Image
Readings
Controls
Activities
Alerts
File Transfer
TRANSFER
SCHEDULE
From
Browse
● Device
○ System files
back_up
templates
Export
DevLog
VNE_-1
SWInput
DDCPAudit
☐ Delete files after upload
Ok
Cancel
| Refresh ▾ | Sign out |
SERVICE
ACTIONS
Manage alerts
Manage schedules
Run command
Add readings
TOTAL ACCESS
Connect to device
FILE MANAGEMENT
Refresh device files
Transfer files
Manage system files
View transfer log
SOFTWARE DIRECTOR
Update software
Get actual configurations
REPORTS
View report
CONFIGURATION
0 Alerts

Last update date of device files: 2013-12-13 16:06:32

	File	Last Modifie	Size
☑	-1-LogFile-2013...	2013-11...	0
☑	-1-LogFile-2013...	2013-11...	204688
☑	-1-LogFile-2013...	2013-11...	134706
☑	-1-LogFile-2013...	2013-11...	168597

Figure 7-44. Log Screen

Chapter 8

Replacement Procedures

This chapter describes how to remove and install, or replace, modules and subsystems in the Venue 50. It also includes instructions for installing and re-installing the software.

Overview

Contents in this chapter

- ‘Overview’ on *page 8-2*
- ‘Warnings and important information’ on *page 8-3*
- ‘Disassembly/Re-assembly’ on *page 8-6*
- ‘Loading Base Image Software’ on *page 8-13*
- ‘Used Media and Used Parts Disposal’ on *page 8-23*

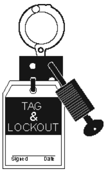
Warnings and important information

Warnings

WARNING

Energy Control and Power Lockout for Venue 50.

When servicing parts of the Ultrasound system where there is exposure to voltage greater than 30 volts:



1. Follow LOCK OUT/TAG OUT procedures.
2. Turn off the breaker.
3. Unplug the Ultrasound system.
4. Maintain control of the Ultrasound system power plug.
5. Wait for at least 30 seconds for capacitors to discharge as there are no test points to verify isolation.
6. Remove/disconnect the battery, if present.

Ultrasound System components may be energized.

WARNING

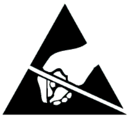
Because of the limited access to cabinets and equipment in the field, placing people in awkward positions, GE has limited the lifting weight for one person in the field to 16 KG (35 LBS). Anything over 16 KG (35 LBS) requires 2 people.

Warnings (continued)

WARNING

DO NOT touch any boards with integrated circuits prior to taking the necessary ESD precautions.

Follow general guidelines for handling of electrostatic sensitive equipment.



NOTE: *Use an ESD compatible work space or the ESD-kit during parts replacement.*

WARNING

The waste of electrical and electronic equipment must not be disposed as unsorted municipal waste and must be collected separately.

Please contact the manufacturer or other authorized disposal company to decommission your equipment.

Returning/shipping probes and repair parts

Equipment being returned must be clean and free of blood and other infectious substances.

GE policy states that body fluids must be properly removed from any part or equipment prior to shipment. GE employees, as well as customers, are responsible for ensuring that parts/equipment have been properly decontaminated prior to shipment. Under no circumstance should a part or equipment with visible body fluids be taken or shipped from a clinic or site (for example, body coils or an ultrasound probe). The purpose of the regulation is to protect employees in the transportation industry, as well as the people who will receive or open this package.

NOTE: The US Department of Transportation (DOT) has ruled that “items that were saturated and/or dripping with human blood that are now caked with dried blood; or which were used or intended for use in patient care” are “regulated medical waste” for transportation purposes and must be transported as a hazardous material.

If the Venue 50 needs to be sent for repair, ensure that any patient information is erased from the storage device, or that the storage device is removed from the Venue 50 before shipping. In case that any patient information is still residing on the Venue 50, GE will contact the customer and request for urgent collection of that patient information. GE will keep this patient information in a secure environment for a maximum period of 1 month. All patient information will be permanently deleted at that point.

If PHI (Patient Healthcare Information) data needs to be sent to GE employees for service purposes, GE will ascertain agreement from the customer. The patient information shall only be transferred by approved service processes, tools and devices restricting access, protecting or encrypting data where required, and providing traceability in the form of paper or electronic documents at each stage of the procedure while maintaining compliance with cross-border restrictions of patient information.

Disassembly/Re-assembly

Warning and Caution

w WARNING	*ONLY QUALIFIED SERVICE PERSONNEL SHOULD REMOVE ANY COVERS OR PANELS. ELECTRICAL HAZARDS EXISTS AT SEVERAL POINTS INSIDE. BECOME THOROUGHLY FAMILIAR WITH ALL HAZARDOUS VOLTAGES AND HIGH CURRENT LEVELS TO AVOID ACCIDENTAL CONTACT*
c CAUTION	Do not wear the ESD wrist strap when you work on live circuits and more than 30V peak is present.

Tools needed for servicing Venue 50

Table 8-1: Standard tools list for Venue 50

No	Part Name	Part No.	QTY	Screw Description	Screwdriver Description
1	Screw	5138465	30	Screw FH M2.5X5 (NL)	Phillips #1
2	Screw	5162727	5	Screw M3x25 (NL)	TORX #10
3	Screw	5308509	2	Screw M3x15 (NL)	TORX #10
4	Screw	2327793	14	D2 Screw SJ2836-87 M3x8	Phillips #1
5	Screw	5307880	5	Screw M3x825 with Cushion	Phillips #1
6	Screw	2327764	7	D2 Screw M2X3 (NYLOK)	Phillips #2
7	Screw	5307881	7	Screw M2x3 OD 7.80	Phillips #1
8	Screw	5307883	8	Screw M2.5x4 OD 3.60	Phillips #1
9	Screw	5307887	6	Screw FH M2.5x15 (NL)	Phillips #1

NOTE: This is ultra-portable device in small size, please carefully keep all the screws, cables aside during service activities.

NOTE: When disassembling the Top Assy, please make sure to lay it on soft and stable surface to avoid scratching the LCD.

Docking Station Desk Support Assy

Tools

- NA

Needed Manpower

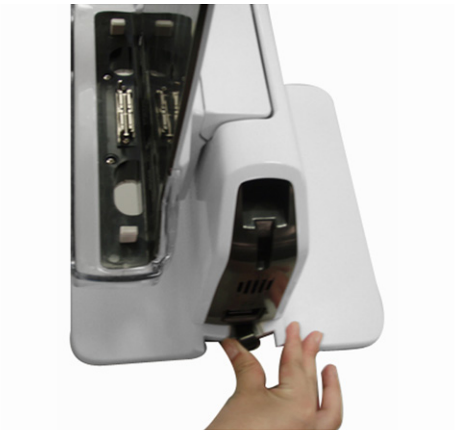
- 1 person, 1 minute

Preparation

- Cut off the AC Power input.

Removal Procedure

Table 8-2: Removal Procedure for Docking Station Desk Support Assy

No.	Steps	Corresponding Graphic
1.	Remove probe holders.	
2.	Push the trigger to the other side, then use the other hand to take the Docking module off track.	

Mounting Procedure

1. Install the new parts in the reversed order of removal.

Docking Cart Plastic Shelf

Tools

- NA

Needed Manpower

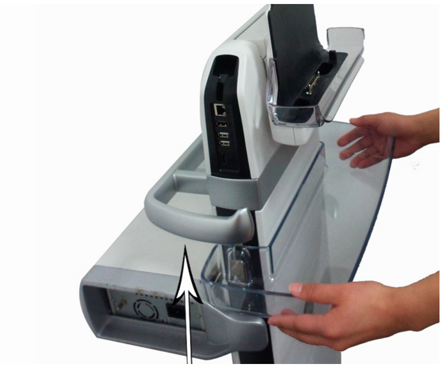
- 1 person, 1 minute

Preparation

- Cut off the AC Power input.
- Lift the cart to the highest position.
- Lock the wheels.

Removal Procedure

Table 8-3: Removal Procedure for Docking Cart Plastic Shelf

No.	Steps	Corresponding Graphic
1.	Lift the Plastic Shelf and remove it from Docking Cart.	

Mounting Procedure

1. Install the new parts in the reversed order of removal.

Docking Cart Printer Shelf

Tools

- Common phillips screwdrivers

Needed Manpower

- 1 person, 2 minutes

Preparation

- Cut off the AC Power input.
- Lift the cart to the highest position.
- Lock the wheels.

Docking Cart Printer Shelf (continued)

Removal Procedure

Table 8-4: Removal Procedure for Docking Cart Printer Shelf

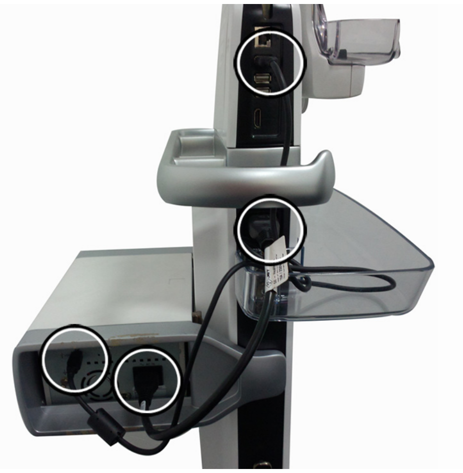
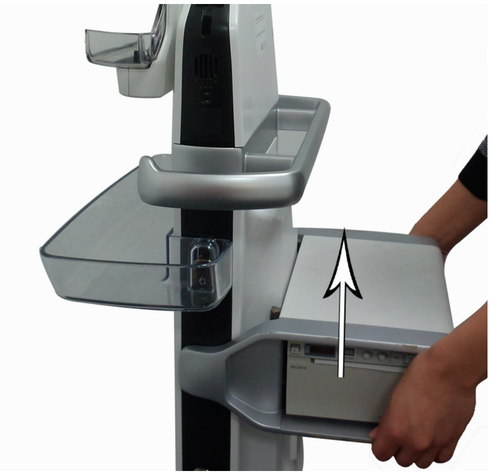
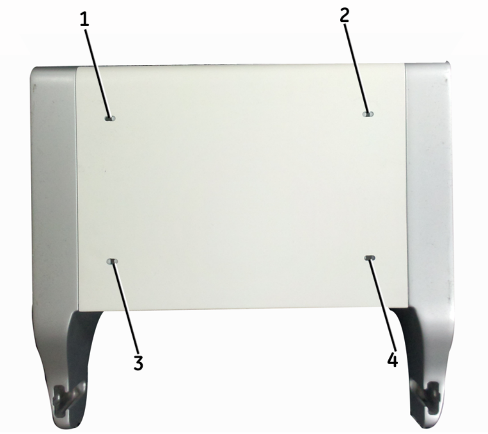
No.	Steps	Corresponding Graphic
1.	Disconnect the printer power cable and USB Cable from Docking module.	
2.	Lift the Printer Shelf and remove it from Docking Cart.	

Table 8-4: Removal Procedure for Docking Cart Printer Shelf

No.	Steps	Corresponding Graphic
3.	Reverse the printer shelf with printer, unscrew 4 screws [M3*8], take out the printer.	

Mounting Procedure

1. Install the new parts in the reversed order of removal.

Loading Base Image Software

Purpose of this section

This section describes how to reinstall and/or install software on Venue 50.

Data Management - moving all images

CAUTION

An error, or a power loss may occur.

Always backup the Patient Archive and the Presets (System Configurations) before loading the software!

In order to complete a successful restore of the Patient Database, as needed after a hard disk replacement, or if all the content on the hard disk has been erased, the images must be moved away from Venue 50 before doing backup of the Patient Database.

Depending on the location set-up, either move the images to a remote server or to removable media like SD Card or USB Memory Stick.

Recording important settings and parameters

If any modification has been made to system default settings, the user presets will be lost after software upgrade. Please record current user presets and re-config the system after the upgrade is complete.

CAUTION

An error, or a power loss may occur.

It is considered to be best practice to always keep a record on paper of the settings for the Venue 50. Verify if it is current before you start to load software!

You may go to **Utility** to record the settings and parameters for **General**, **Settings**, **Image**, **Measure**, **System**, **Connectivity** and **About**. You may refer to Chapter 4 in Basic User Manual (the latest version).

Loading the System Software

NOTE: Before loading the system software, please ensure that the power can be continuously supplied and there is no risk of power cut off during loading procedure.

NOTE: Before starting this procedure, remove all probes and peripherals.

NOTE: While it is believed to be unnecessary, it would not hurt to disconnect the system from the network and remove all transducers.

NOTE: Do not plug and unplug the probe, mount to or release from the Docking Station/Cart during the upgrading process.

1. Insert the SD Card labeled “VENUE Software” into the SD Card Socket.
2. Power on the system, then the software upgrading startup screen displays. Time in the upper right corner shows system time, and the time in the lower right corner shows the time of upgrading process.

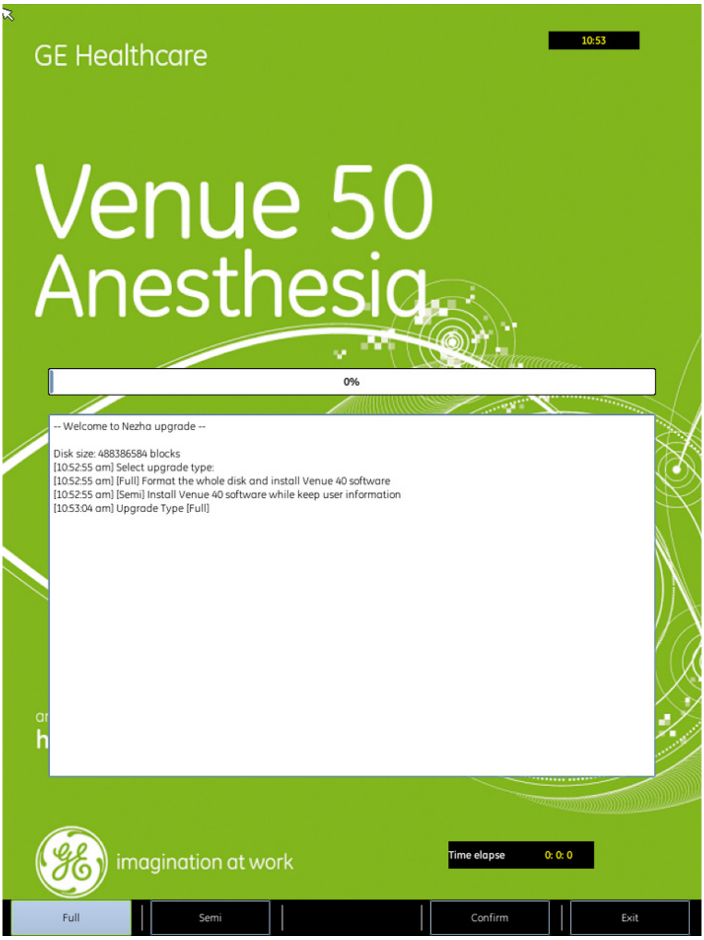
Loading the System Software (continued)

3. Select **Semi** or **Full** for the installation type.
    - **Semi**: install the software to system partition only. All the user data and log will be kept.
    - **Full**: format the whole disk and then install the software to system partition. All the user data and log will be cleared.

WARNING

Full installation will clear all the user data and log.

4. Press **Confirm** to confirm the selection. Press **Exit** to cancel.


GE Healthcare
10:53
Venue 50
Anesthesia
0%
imagination at work
Time elapse 0: 0: 0
Full
Semi
Confirm
Exit

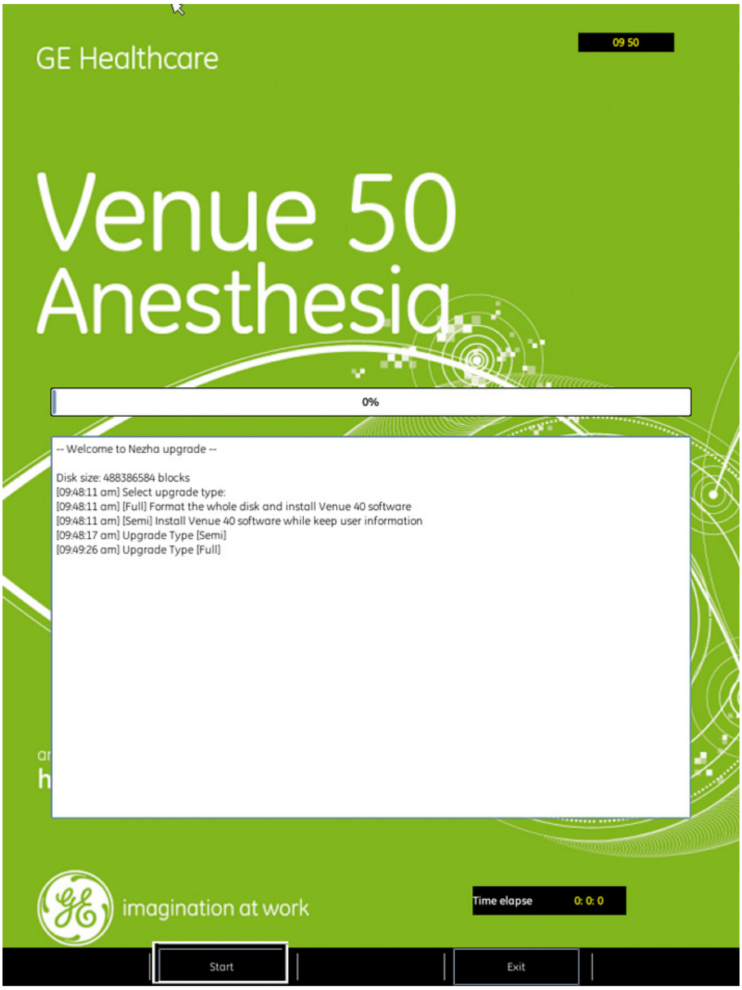
```
-- Welcome to Nezha upgrade --

Disk size: 488386584 blocks
[10:52:55 am] Select upgrade type:
[10:52:55 am] [Full] Format the whole disk and install Venue 40 software
[10:52:55 am] [Semi] Install Venue 40 software while keep user information
[10:53:04 am] Upgrade Type [Full]
```

Figure 8-1. Select Installation Type

Loading the System Software (continued)

5. Press **Start** to begin the upgrading process.



GE Healthcare
09 50
Venue 50
Anesthesia
0%
imagination at work
Time elapse
0: 0: 0
Start
Exit

```
-- Welcome to Nezha upgrade --

Disk size: 488386584 blocks
[09:48:11 am] Select upgrade type:
[09:48:11 am] [Full] Format the whole disk and install Venue 40 software
[09:48:11 am] [Semi] Install Venue 40 software while keep user information
[09:48:17 am] Upgrade Type [Semi]
[09:49:26 am] Upgrade Type [Full]
```

Figure 8-2. Start Installation Process

NOTE: Before the process is started, the system will count down 10 seconds.

Loading the System Software (continued)

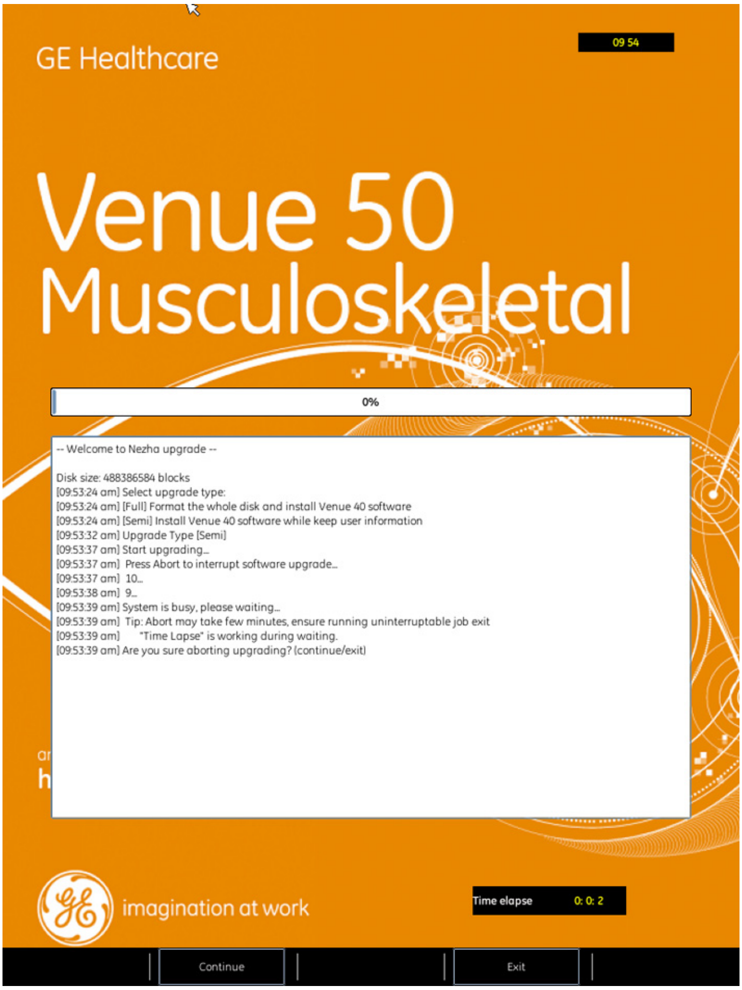
6. If you need to pause the upgrade process, press **Abort**.

NOTE: *You may need to wait for a few seconds before you can go to the next step.*

CAUTION

It is not recommended to press Abort during the upgrading process, for system crash may occur. Shut down the system and restart the upgrading process again.

7. When the process is paused, press **Continue** to go back to the upgrading, press **Exit** to cancel the upgrading.



```
-- Welcome to Nezha upgrade --

Disk size: 488386584 blocks
[09:53:24 am] Select upgrade type:
[09:53:24 am] [Full] Format the whole disk and install Venue 40 software
[09:53:24 am] [Semi] Install Venue 40 software while keep user information
[09:53:32 am] Upgrade Type [Semi]
[09:53:37 am] Start upgrading...
[09:53:37 am]  Press Abort to interrupt software upgrade...
[09:53:37 am]  10...
[09:53:38 am]  9...
[09:53:39 am] System is busy, please waiting...
[09:53:39 am]  Tip: Abort may take few minutes, ensure running uninterruptable job exit
[09:53:39 am]       "Time Lapse" is working during waiting.
[09:53:39 am] Are you sure aborting upgrading? (continue/exit)
```

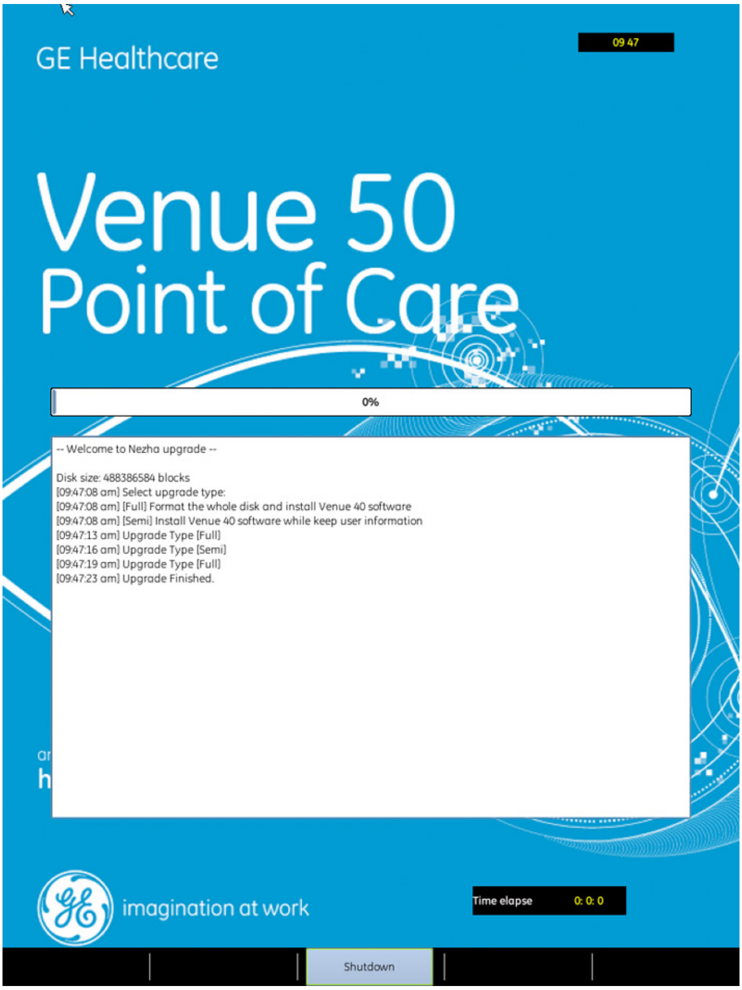
Figure 8-3. Upgrading process paused

Loading the System Software (continued)

8. After the process is completed, press **Shutdown** to shut down the system. Take out the SD card and reboot the system.

CAUTION

If the SD card is taken out before the system shutdown, system crash may occur. Press and hold down the On/Off switch until the system shutdown.



```
-- Welcome to Nezha upgrade --

Disk size: 488386584 blocks
[09:47:08 am] Select upgrade type:
[09:47:08 am] [Full] Format the whole disk and install Venue 40 software
[09:47:08 am] [Semi] Install Venue 40 software while keep user information
[09:47:13 am] Upgrade Type [Full]
[09:47:16 am] Upgrade Type [Semi]
[09:47:19 am] Upgrade Type [Full]
[09:47:23 am] Upgrade Finished.
```

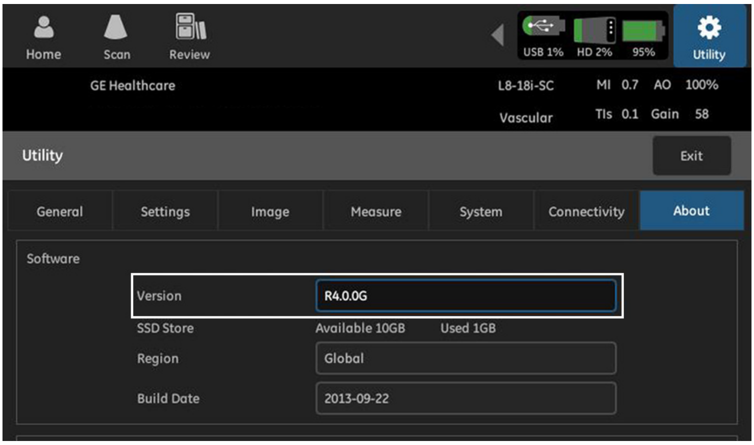
Figure 8-4. Upgrading process complete

9. Perform Touch Screen Calibration: go to **Utility**->**Diagnostics**->**Miscellaneous** to execute touch screen calibration.

Software Version check out

Functional Check-out

1. Press **Utility**, select **About** to check whether the software version is the right version for use.


Home
Scan
Review
USB 1%
HD 2%
95%
Utility
GE Healthcare
L8-18i-SC
Vascular
MI 0.7
AO 100%
TIs 0.1
Gain 58
Utility
Exit
General
Settings
Image
Measure
System
Connectivity
About
Software

Version: R4.0.0G

SSD Store: Available 10GB Used 1GB

Region: Global

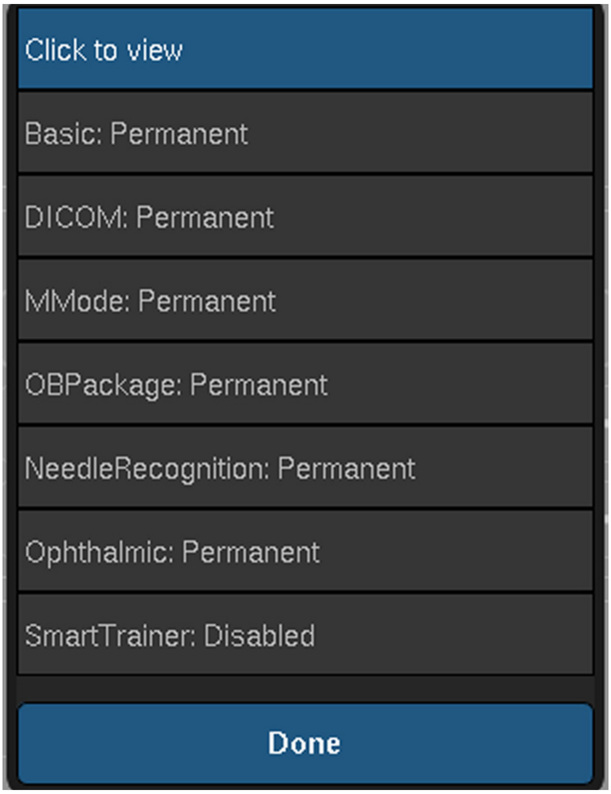
Build Date: 2013-09-22

Figure 8-5. Software version check

Option Strings Check

NOTE: *After the system software loading completion, please check the option strings to ensure that the options are activated and working.*

1. Reboot the system.
2. Select **Utility** ->**System**.
3. Ensure that all the installed option keys are displayed and the status of Options are valid.
   - The status “Permanent” means the option keys are activated and woking.
   - The status “disabled” means the option keys are not activated and not working. Check if the option is installed and if the serial number and option key are correct.



Click to view

Basic: Permanent

DICOM: Permanent

MMode: Permanent

OBPackage: Permanent

NeedleRecognition: Permanent

Ophthalmic: Permanent

SmartTrainer: Disabled

Figure 8-6. Strings check

Probe Recognition Check

NOTE: After the system software loading completion, please check to ensure that the system can recognize the probes.

Plug in the probe. In scanning mode, the probe information is displayed on the right top location of the screen.

Plug in at least one of each type of the probes and check if each of the probes is recognized and the probe information is displayed correctly.

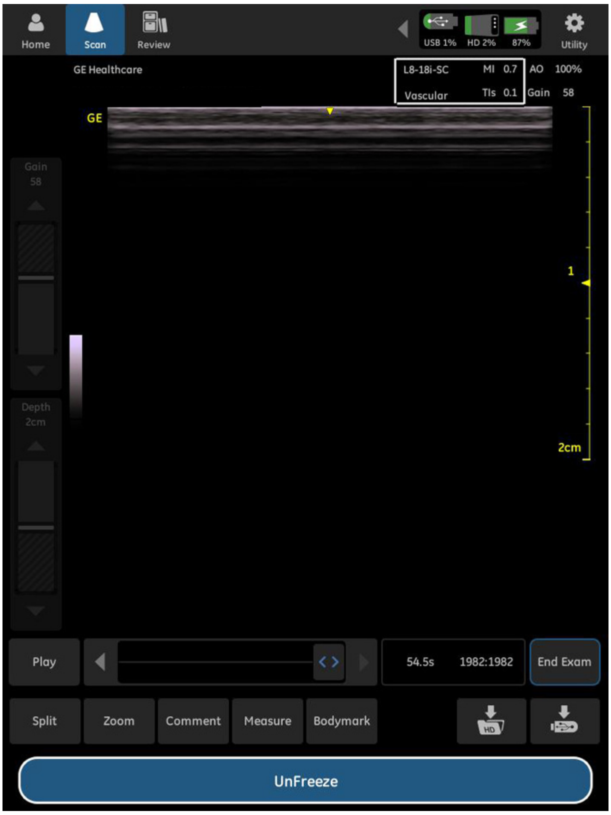

Home
Scan
Review
USB 1%
HD 2%
87%
Utility
GE Healthcare
L8-18i-SC
MI 0.7
AO 100%
Vascular
TIs 0.1
Gain 58
GE
Gain
58
Depth
2cm
1
2cm
Play
54.5s
1982:1982
End Exam
Split
Zoom
Comment
Measure
Bodymark
HD
UnFreeze

Figure 8-7. Probe identification

Peripheral Device Check

Check to ensure that all the peripheral devices work properly.

For instruction of peripheral device check, See ‘Peripheral Checks’ on *page 4-25 for more information.*

Used Media and Used Parts Disposal

WARNING

The waste of electrical and electronic equipment must not be disposed as unsorted municipal waste and must be collected separately.

Please contact the manufacturer or other authorized disposal company to decommission your equipment.

1. Properly dispose of all old or used parts and media according to current policies and procedures. Never keep old software or leave old software at the customer site.
2. Ensure that no Proprietary Material, such as this installation manual and the Venue 50 Proprietary Manual, are left at the customer.

Chapter 9

Renewal Parts

This chapter lists the renewal parts available for the Venue 50.

Overview

Contents in this chapter

- ‘Overview’ on *page 9-2*
- ‘List of Abbreviations’ on *page 9-3*
- ‘Renewal Parts Lists’ on *page 9-4*

List of Abbreviations

Table 9-1: List of Abbreviations

ABBREVIATION	DESCRIPTION
Assy	ASSEMBLY
FRU Y	Replacement Part
FRU N	Non Stock Part
PWA	Printed Wire Assembly
HDD	Hard Disk Drive
LCD	Liquid Crystal Display
Ctrl	Control
MST	Master Board

Renewal Parts Lists

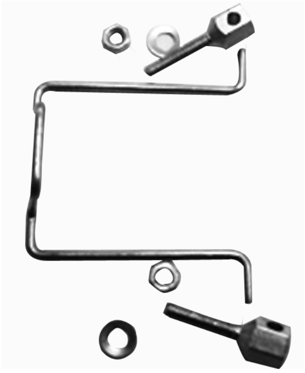
NOTE: The part replacement is shown by the item numbers. If the part is replaced by a new version, the item number for the new version will have a letter in the alphabetical order after the Arabic numerals. For example, item 300B is to replace item 300A, and item 300A is to replace item 300. So please refer to the item numbers for the latest version of the parts.

Power Cables

Table 9-2: Power Cord for Docking Cart

Part Name	Part Number	Description	Qantity
ACDC Power Cable	5177146-2	ACDC Power Cable for USA	1
ACDC Power Cable	5177123-2	ACDC Power Cable for Europe	1
ACDC Power Cable	5176304-2	ACDC Power Cable for China	1
ACDC Power Cable	5177126-2	ACDC Power Cable for Japan	1
ACDC Power Cable	5177187-3	ACDC Power Cable for Australia and New Zealand	1
ACDC Power Cable	5176907-2	ACDC Power Cable for United Kingdom/Ireland	1
ACDC Power Cable	5176773-2	ACDC Power Cable for India/South Africa	1
ACDC Power Cable	5177195-2	ACDC Power Cable for Argentina	1
ACDC Power Cable	5177153-2	ACDC Power Cable for Denmark	1
ACDC Power Cable	5176753-2	ACDC Power Cable for Israel	1
ACDC Power Cable	5177154-2	ACDC Power Cable for Switzerland	1
ACDC Power Cable	5400868-2	ACDC Power Cable for Brazilian	1

Table 9-3: Accessory parts for Docking Cart Power cable

Part Name	Part Number	Description	Qantity
Retaining clip KT0006	5317638	Retaining clip for AC inlet 	1

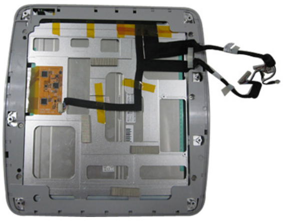
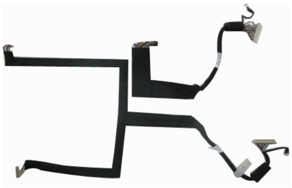
Power Cables (continued)

Table 9-4: Power Cord for Docking Station

Part Name	Part Number	Description	Qantity
ACDC Power Cable	5314913	ACDC Power Cable for USA	1
ACDC Power Cable	5314914	ACDC Power Cable for Europe	1
ACDC Power Cable	5120439	ACDC Power Cable for China	1
ACDC Power Cable	5120440	ACDC Power Cable for Japan	1
ACDC Power Cable	5125218	ACDC Power Cable for Australia and New Zealand	1
ACDC Power Cable	5125219	ACDC Power Cable for United Kingdom	1
ACDC Power Cable	5125220	ACDC Power Cable for Denmark	1
ACDC Power Cable	5125221	ACDC Power Cable for India/South Africa	1
ACDC Power Cable	5125223	ACDC Power Cable for Argentina	1
ACDC Power Cable	5125227	ACDC Power Cable for Israel	1
ACDC Power Cable	5125228	ACDC Power Cable for Switzerland	1
ACDC Power Cable	5400793	ACDC Power Cable for Brazilian	1

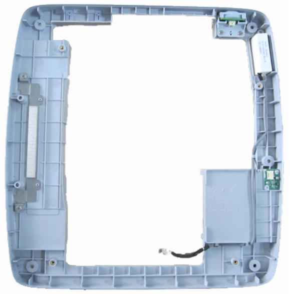
Top Assy

Table 9-5: Top Assy

Item	Part Number	Part Name	Corresponding graphic	Qty
100	5437203-S	Top Assy		1
101	5262177-4S	LCD and touch screen cable kits		1

Middle Cover Assy

Table 9-6: Middle Cover Assy

Item	Part Number	Part Name	Corresponding graphic	Qty
200	5441974-S	Middle Cover Assy		1

Bottom Assy

Table 9-7: Bottom Assy

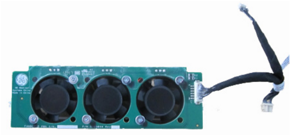
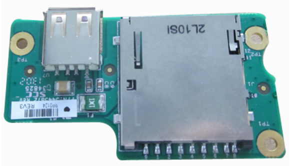
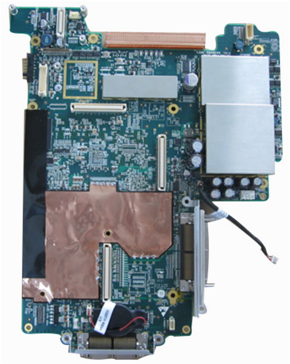
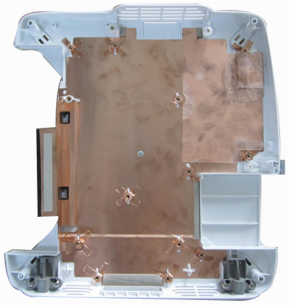
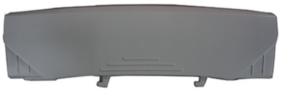
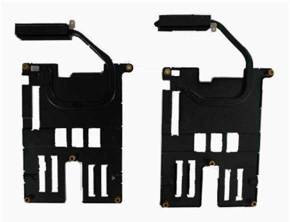
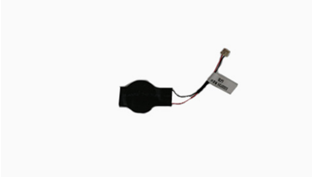
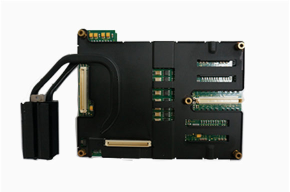
Item	Part Number	Part Name	Corresponding graphic	Qty
300	R2354258-12	TR32 Board		1
301	5439562-S	Fans		1
302	5445872-S	SD/USB board		1
303	5436553-2S	MST board		1
304	5487314-S	Bottom Cover Assy		1

Table 9-7: Bottom Assy

Item	Part Number	Part Name	Corresponding graphic	Qty
305	5195559-2	Battery		1
306	5317644-2	Heat Sink		1
307	5322731	CMOS Battery Assy		1
308	5406280	TR32 V 12 with Heatpipe assy		1

Docking Station Assy

Table 9-8: Docking Station Assy

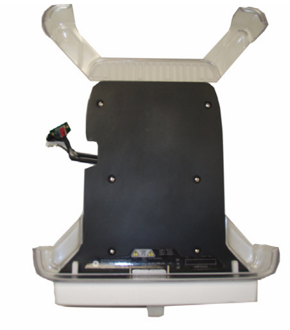
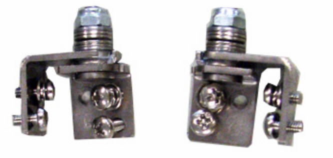
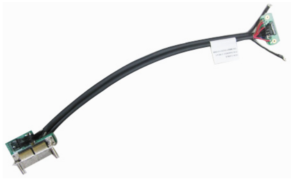
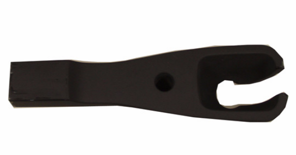
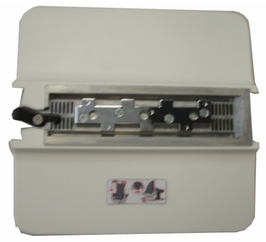
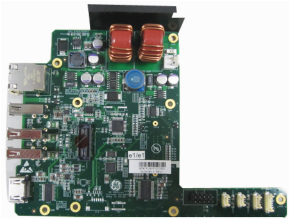
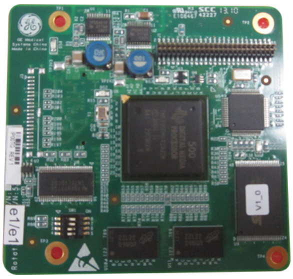
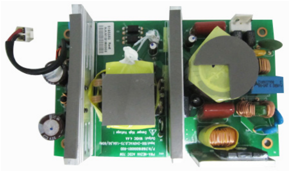
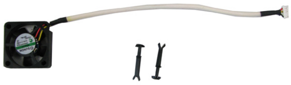
Item	Part Number	Part Name	Corresponding graphic	Qty
400	5457181-S	Docking Holder Assy		1
401	5316476	Docking Hinge Assy		1
402	5446802-2S	Docking Cable		1
403	5316922-2	Docking Probe Holder		1
404	5316130	Docking Desk Support		1

Table 9-8: Docking Station Assy

Item	Part Number	Part Name	Corresponding graphic	Qty
405	5438745-2S	Docking Function Board		1
406	5323387-3S	Docking Rotating module PWA		1
407	5339194	Docking ACDC Module		1
408	5341629	Docking Fan		1

Docking Cart Assy

Table 9-9: Docking Cart Assy

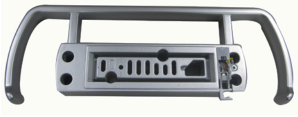
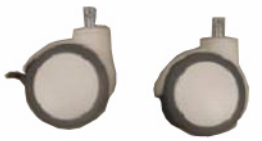
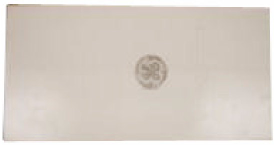
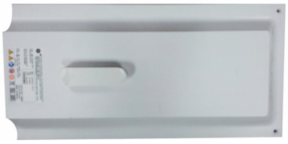
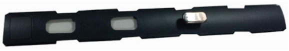
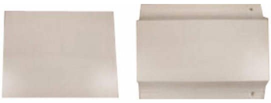
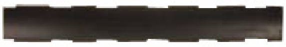
Item	Part Number	Part Name	Corresponding graphic	Qty
500	5459463-S	Cart Handle Assy		1
501	5321852	2 front wheels and 2 back wheels		1
502	5321889	Front Cover		1
503	5321891-3	Back Cover		1
504	5321893-2	Upside Covers		2
505	5321895	Below front and back covers		1
506	5321896	Below side covers		2

Table 9-9: Docking Cart Assy

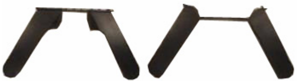
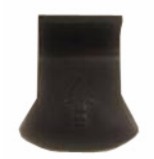
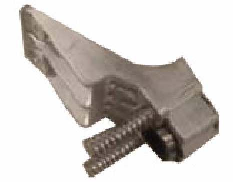
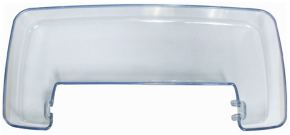
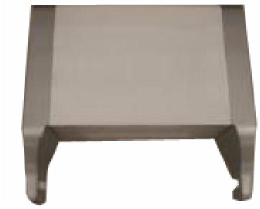
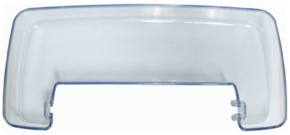
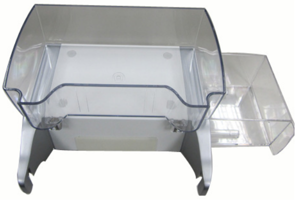
Item	Part Number	Part Name	Corresponding graphic	Qty
507	5321897	Below chasis covers		1
508	5321899	Pedal cover		1
509	5321900	Pedal Assy		1
510	5321901	Plastic shelf		1
511	5321853-3	Printer shelf		1
512	5374990	Deep basket		1
513	5491956	Printer shelf with drawer and on shelf basket		1

Table 9-9: Docking Cart Assy

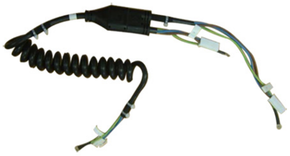
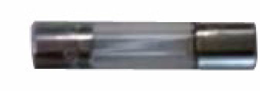
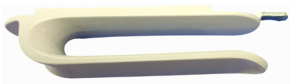
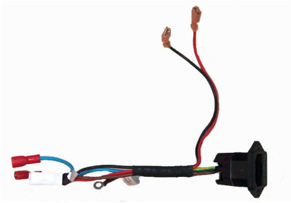
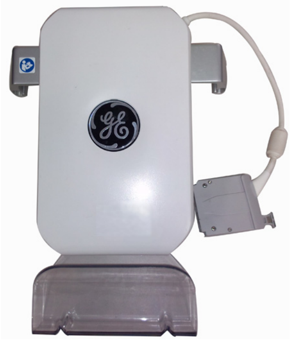
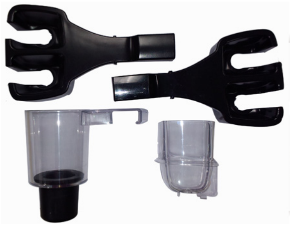
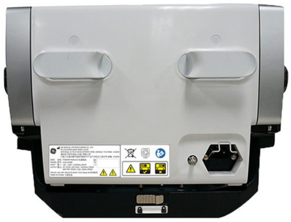
Item	Part Number	Part Name	Corresponding graphic	Qty
514	5317236	Spring Cable		1
515	5323553	Fuse		1
516	5317527	Printer USB cable		1
517	5323734	Printer power cord		1
518	5342989	Power Cable Hook		1
519	5363498	Probe Cable Hook kit		1
520	5357568	Docking AC Inlet Cable		1

Table 9-9: Docking Cart Assy

Item	Part Number	Part Name	Corresponding graphic	Qty
521	5447044	Cart AC Inlet Cable		1
522	5371446	Gas spring		1
523	5440423-S	3-probe Port Box with package SVC		1
524	5491955	Multi-probe holder, gel holder and E8CS holder		1
525	5459877	Power Module		1

Accessories and Kits

Table 9-10: Accessories and Kits

Item	Part Number	Part Name	Qty
600	5443754-4	Venue 50 R4.0.3 software upgrade SD Card	1
600A	5443754-5	Venue 50 R4.0.4 software upgrade SD Card	1
600B	5443754-6	Venue 50 R4.0.5 software upgrade SD Card	1
600C	5443754-7	Venue 50 R4.0.6 software upgrade SD Card	1
601	5315799	SD Card Reader	1
602	5396398-2	USB wireless adapter	1
603	5420425	USB footswitch	1
604	5151259	UP-D897Digital B/W Printer (USA)	1
605	5151261	UP-D897Digital B/W Printer (EU)	1
606	5151259-2	UP-D898Digital B/W Printer(USA)(for R4.0.6 and above)	1
607	5151261-2	UP-D898Digital B/W Printer(EU)(for R4.0.6 and above)	1
608	5151262-2	UP-D898Digital B/W Printer(China)(for R4.0.6 and above)	1
609	5151263-2	UP-D898Digital B/W Printer(Japan)(for R4.0.6 and above)	1
610	5151264-2	UP-D898Digital B/W Printer(Brazil)(for R4.0.6 and above)	1
611	5446188	Barcode Reader	1
612	5508253	Venue 50 SSD wipe tool	1
613	5582241	Nezha R4 antiglare film kits	1

Probe

Table 9-11: Probes for Venue 50

Item	Part Number	Part Name	Graphic	Description
700	5499959 to replace 5309652	3S-SC		Sector Probe (Frequency Range: 2.0 ± 20%)
701	5499958 to replace 5304023	12L-SC		Linear Array Probe (Frequency Range: 7.5 ± 20%)
702	5499595 to replace 5384872	L8-18i-SC		Linear Probe (Frequency Range: 9.5 ± 20%)
703	5499960 to replace 5337604	4C-SC		Convex Probe (Frequency Range: 3.1 ± 10%)
704	5499966 to replace 5413888	E8CS-SC		ConvexProbe (Frequency Range: 6.5 ± 20%)
705	5456227	10C-SC		ConvexProbe (Frequency Range: 8.0 ± 20%)

Manuals

Table 9-12: Manuals for Venue 50

Item	Part Number	Description	Qty
800	5447566-100	Venue 50 Basic Service Manual	1
System User Manual			
801	5446729-100	Venue 50 Basic User Manual, English	1
802	5446729-101	Venue 50 Basic User Manual, French	1
803	5446729-106	Venue 50 Basic User Manual, Spanish	1
804	5446729-108	Venue 50 Basic User Manual, German	1
805	5446729-111	Venue 50 Basic User Manual, Italian	1
806	5446729-121	Venue 50 Basic User Manual, Dutch	1
807	5446729-127	Venue 50 Basic User Manual, Brazilian Portuguese	1
808	5446729-129	Venue 50 Basic User Manual, Estonian	1
809	5446729-140	Venue 50 Basic User Manual, Japanese	1
810	5446729-141	Venue 50 Basic User Manual, Chinese	1
811	5446729-142	Venue 50 Basic User Manual, Swedish	1
812	5446729-144	Venue 50 Basic User Manual, Korean	1
813	5446729-145	Venue 50 Basic User Manual, Russian	1
814	5446729-150	Venue 50 Basic User Manual, Polish	1
815	5446729-151	Venue 50 Basic User Manual, Greek	1
816	5446729-153	Venue 50Basic User Manual, Hungarian	1
817	5446729-154	Venue 50 Basic User Manual, Slovakian	1
818	5446729-155	Venue 50 Basic User Manual, Czech	1
819	5446729-159	Venue 50 Basic User Manual, Turkish	1
820	5446729-160	Venue 50 Basic User Manual, Danish	1
821	5446729-161	Venue 50 Basic User Manual, Norwegian	1
822	5446729-162	Venue 50 Basic User Manual, Finnish	1
823	5446729-165	Venue 50 Basic User Manual, Bulgarian	1
824	5446729-167	Venue 50 Basic User Manual, Romanian	1
825	5446729-168	Venue 50 Basic User Manual, Croatian	1
826	5446729-174	Venue 50 Basic User Manual, Lithuanian	1
827	5446729-175	Venue 50 Basic User Manual, Latvian	1

Table 9-12: Manuals for Venue 50

Item	Part Number	Description	Qty
828	5446729-176	Venue 50 Basic User Manual, Serbian	1
829	5446729-177	Venue 50 Basic User Manual, European Portuguese	1
830	5446729-180	Venue 50 Basic User Manual, Ukrainian	1
831	5446729-181	Venue 50 Basic User Manual, Indonesian	1

Chapter 10

Care and Maintenance

This chapter describes Care and Maintenance on the Ultrasound system and peripherals. These procedures are intended to maintain the quality of the Ultrasound system's performance. Read this chapter completely and familiarize yourself with the procedures before performing a task.

Overview

Periodic maintenance inspections

It has been determined by engineering that your Venue 50 does not have any high wear components that fail with use, therefore no Periodic Maintenance inspections are mandatory.

However, some customers’ Quality Assurance Programs may require additional tasks and or inspections at a different frequency than listed in this manual.

Contents in this chapter

- ‘Overview’ on *page 10-2*
- ‘Warnings’ on *page 10-3*
- ‘Why do maintenance’ on *page 10-4*
- ‘Maintenance task schedule’ on *page 10-5*
- ‘Tools required’ on *page 10-7*
- ‘System maintenance’ on *page 10-11*
- ‘Electrical safety tests’ on *page 10-18*
- ‘When there's too much leakage current …’ on *page 10-32*
- ‘Inspection Paperwork’ on *page 10-34*

Warnings

⚠ DANGER	BE SURE TO DISCONNECT THE ULTRASOUND SYSTEM POWER PLUG AND OPEN THE MAIN CIRCUIT BREAKER BEFORE YOU REMOVE ANY PARTS. BE CAUTIOUS WHENEVER POWER IS STILL ON AND COVERS ARE REMOVED.
⚠ CAUTION	Practice good ESD prevention. Wear an anti–static strap when handling electronic parts and even when disconnecting/ connecting cables.
⚠ CAUTION	Do not pull out or insert circuit boards while power is on.
⚠ CAUTION	Do not operate this Ultrasound system unless all board covers and frame panels are securely in place. System performance and cooling require this.

Why do maintenance

Keeping records

It is good business practice that ultrasound facilities maintain records of periodic and corrective maintenance. The Ultrasound Periodic Maintenance Inspection Certificate provides the customer with documentation that the Ultrasound system is maintained on a periodic basis.

A copy of the *Ultrasound Periodic Maintenance Inspection Certificate* should be kept in the same room or near the Ultrasound system.

Quality assurance

In order to gain accreditation from organizations such as the American College of Radiology (USA), it is the customer's responsibility to have a quality assurance program in place for each Ultrasound system. The program must be directed by a medical physicists, the supervising radiologist/physician or appropriate designee.

Routine quality control testing must occur regularly. The same tests are performed during each period so that changes can be monitored over time and effective corrective action can be taken.

Testing results, corrective action and the effects of corrective action must be documented and maintained on the site.

Your GE service representative can help you with establishing, performing and maintaining records for a quality assurance program. Contact GE for coverage and/or price for service.

Maintenance task schedule

How often should maintenance tasks be performed?

The Care and Maintenance task schedule (provided in Table 10-1 *on page 10-6*) specifies how often your Venue 50 should be serviced and outlines items requiring special attention.

NOTE: *It is the customer's responsibility to ensure the Venue 50 care and maintenance is performed as scheduled in order to retain its high level of safety, dependability and performance.*

Your GE Service Representative has an in-depth knowledge of your Venue 50 and can best provide competent, efficient service. Contact GE for coverage information and/or price for service.

The service procedures and recommended intervals shown in the Care and Maintenance Task Schedule assumes that you use your Venue 50 for an average patient load (10-12 per day) and not use it as a primary mobile Ultrasound system which is transported between diagnostic facilities.

How often should maintenance tasks be performed? (continued)

NOTE: If conditions exist which exceed typical usage and patient load, then it is recommended to increase the periodic maintenance frequencies.

Table 10-1: Customer Care Schedule

Service at Indicated Time	Daily	Weekly	Monthly	Per Facilities QA Program	Notes
Clean Probes	•*				* or before each use
Inspect AC Mains Cable			•		Mobile Ultrasound system: Check Weekly
Inspect Cables and Connectors			•		
Inspect Battery			•		
Clean Console			•		
Clean LCD			•		
Console Leakage Current Checks				See Notes	Twice Annually
Peripheral Leakage Current Checks				See Notes	Twice Annually
Surface Probe Leakage Current Checks				See Notes	Twice Annually
Measurement Accuracy Checks				See Notes	Twice Annually
Functional Checks				See Notes	also after corrective maintenance

NOTE: The maintenance may require specialized equipment to complete.

NOTE: The periodic maintenances are not mandatory. The table above is for reference only.

Tools required

NOTE: For a list of required tools for servicing the Venue 50, refer to chapter 8.

Standard GE tool kit

The following is a description of the “Standard” GE tool kit in the USA. Not all tools are required.

Table 10-2: Overview of GE-1 tool kit contents

Tool ID	Description	Tool ID	Description
9-45358	Pliers Retaining Ring	9-XL9971MM	Xcelite-hex Blade 1.27mm
9-4078	Scribe	9-XL9972MM	Xcelite-hex Blade 1.5mm
9-44572	Wrench Open End 3/8 - 7/16	9-XL9973MM	Xcelite-hex Blade 2 mm
9-44579	Wrench Open End 1/2 - 9/16	9-XL9974MM	Xcelite-hex Blade 2.5mm
9-44579	Wrench Open End 1/2 - 9/16	9-XL9975MM	Xcelite-hex Blade 3mm
9-45385	Pliers, Arc Joint 7 inch	9-XL9976MM	Xcelite-hex Blade 4mm
9-45378	Pliers, Slip Joint	9-XL9977MM	Xcelite-hex Blade 5mm
9-4518	Pliers, Long Nose, Miniature	9-XL991CM	Handle
9-4518	Pliers, Long Nose, Miniature	C2356E	Screw starter - Kedman Quick Wedge
9-44776	Ignition Wrench Set, 10 pc.	BLBO	Box - 18 Compartment
9-44601	Wrench, Adj., 4 inch	DWL4283T	Box - 5 Compartment
9-4151	Screwdriver, Blade, Stubby	9-41322	Pickup Tool, Claw type
9-41421	Screwdriver, Blade, Pocket clip	9-6757	6 pc Needle File Set
9-41594	Screwdriver, Blade 1/8 in. × 4 in.	9-9487	Utility Knife
9-41581	Screwdriver, Blade 3/16 in. × 4 in.	9-45341	Pliers Vice Grip 10 inch
9-39451	20' Steel Tape, locking Spring load	9-3001	Xacto Pen Knife

Table 10-2: Overview of GE-1 tool kit contents (Continued)

Tool ID	Description	Tool ID	Description
9-GH807	Ratchet, Offset, Slotted	9-HT62002	Solder Aid, Fork and Hook
68-412	Ratchet, Offset, Phillips	9-4099	Mirror, Round, Telescoping
9-GH130	Tapered Reamer	9-GH3001	Steel Rule Decimal 6 inch
9-41584	Screwdriver, slotted 1/4 in. × 6 in.	9-GH300ME	Steel Rule Metric 6 inch
9-4118	Screwdriver, Phillips #2, Stubby	9-XL9920	Xcelite-hex Blade.050 inch
9-41293	Screwdriver, Phillips #0	9-XL9921	Xcelite-hex Blade 1/16 inch
9-41294	Screwdriver, Phillips #1	9-XL9922	Xcelite-hex Blade 5/16 inch
9-41295	Screwdriver, Phillips #2	9-XL9923	Xcelite-hex Blade 3/32 inch
9-46677	Hex Keys, 20 pc., Metric	9-XL9924	Xcelite-hex Blade 1/8 inch
9-34701	1/4 in. Standard Socket set (19 pc)	9-XL9925	Xcelite-hex Blade 5/32 inch
9-43499	1/2 inch Socket 1/4 inch drive	9-XL9926	Xcelite-hex Blade 3/16 inch
9-4355	Flex Spinner	9-XL99764	Xcelite-hex Blade 7/64
9-43523	Breaker	9-XL99964	Xcelite-hex Blade 9/64
9-43531	6 inch Ext.	9-XLM60	Mini-screwdriver kit
9-65283	Case 8.5 in. × 4.5 in. × 2 in. Deep	9-45072	Pliers 6 inch Diagonal
9-46696	Hex Keys	9-XL100X	Wire Stripper/Cutter 5 inch - 100X
9-39829	Torpedo Level, Magnetic	9-XL87CG	Pliers - very fine needle nose-87CG
9-38461	Hammer, Ball Peen, 4 oz.	9-WEWDT-07	Weller-Soldering-Replacement Tip(1)
9-4280	Universal Joint 1/4 inch	9-WS175-E	Wiss - Surgical Scissors
9-WEW60P3	Weller - Soldering Iron, 3 wire	KH174	Hemostat 5 inch Straight
9-WECT5B6	Weller - Soldering Iron Tip	KH175	Hemostat 5 inch curved
9-WEWDP12	Weller - Desoldering Pump	9-Z9480121	Alignment tool (red)
93383	Flashlight Mini-Mag Lite (AAA Bat.)		
9-GH408	Tweezers		
21576	Brush - Bristle		

Table 10-2: Overview of GE-1 tool kit contents (Continued)

Tool ID	Description	Tool ID	Description
9-4516	Pliers 4 1/4 inch Diagonal		

GE-2 tool kit

Table 10-3: Overview of GE-2 tool kit contents

GE-2 Sears Kit (#99034)			
Tool ID	**Description**	**Tool ID**	**Description**
9-45381	Pliers, Arc Joint 9 1/2 inch	9-44067	Socket 1 1/16 in. for 1/2 in. drive
9-45092	Pliers, Linesman 8 1/2 inch	9-42679	Socket 10MM Hex for 1/2 in. drive (2273333)
9-42882	Punch, Pin 3/32 inch	9-44262	Extension 10 inch for 1/2 in. drive (2273405)
9-42884	Punch, Pin 5/32 inch	9-4258	3/8 inch to 1/2 inch Adapter
9-42886	Punch, Pin 1/4 inch	9-34374	3/8 inch Metric Socket Set - 12 PT
9-42973	Cold Chisel 1/2 inch	9-44311	16mm Socket 12 pt.
9-GH77	Center Punch Automatic	9-33485	Metal Socket Tray
9-GH890	File Handle, Adj.	9-33484	Metal Socket Tray
9-31276	File, Round, Bastard 8 inch	9-33484	Metal Socket Tray
9-31277	File, Half Round, Bastard 8 inch	9-52068	Tap and Drill Set
9-31263	File, Flat Mill 8 inch	9-52722	#6 Tap
21045C	Close Quarter Saw	9-52723	#8 Tap
9-44604	Wrench, Adj. 10 inch		High Speed Drill Set
9-41587	Screwdriver 5/16 inch × 8 inch		#36 Drill
9-41586	Screwdriver, Stubby 5/16 inch		#29 Drill
9-GH19512	Countersink 1/2 inch	9-44046	3/8 inch Socket Set
9-44741	12 PC Combination Wrench Set		

Special tools, supplies and equipment used for maintenance

Table 10-4: Overview of tool requirements for periodic maintenance

Tool / kit	Part Number	Comments
Safety Analyzer		The safety Analyzer tool should be calibrated and compliant with AAMI/ESI 1993 or IEC 60601 or AS/NZS 3551.
B/W Printer Cleaning Sheet		See printer user manual for requirements
Color Printer Cleaning Sheet		See printer user manual for requirements
Disposable Gloves		

System maintenance

Preliminary checks

The preliminary checks take about 15 minutes to perform. Refer to the Ultrasound system user documentation whenever necessary.

Table 10-5: System preliminary checks

Step	Item	Description
1.	Ask and Listen	Ask the customer if they have any problems or questions about the equipment.
2.	Paperwork	Fill in the top of Ultrasound Inspection Certificate (see Figure 10-6 *on page 10-34*). Record all probes and Ultrasound system options.
3.	Power up	• Turn the Ultrasound system power on and verify that all fans and peripherals turn on. • Watch the displays during power up to verify that no warning or error messages are displayed. • Where applicable, confirm that the battery is charged. If no AC Input present, use the internal battery.
4.	Probes	Verify that the Ultrasound system properly recognizes all probes.
5.	Displays	Verify proper display on the monitor.

Functional checks

NOTE: See also Chapter 4.

The functional checks take about 60 minutes to perform. Refer to the Ultrasound system user documentation whenever necessary.

System checks

Table 10-6: System functional checks

Step	Item	Description
1.	B Mode	Verify basic B Mode (2D) operation. Check the basic Ultrasound system controls that affect this mode of operation.
2.	CF Mode	Verify basic CF Mode (Color Flow Mode) operation. Check the basic Ultrasound system controls that affect this mode of operation.
3.	PDI Modes	Verify basic PDI Mode operation (Power Doppler Imaging). Check the basic Ultrasound system controls that affect this mode of operation.
4.	M Mode	Verify basic M Mode operation. Check the basic Ultrasound system controls that affect this mode of operation.
5.	Probe Elements	Perform an Element Test on each probe to verify that all the probe elements and system channels are functional.
6.	Applicable Software Options	Verify the basic operation of all optional modes such as Contrast. Check the basic Ultrasound system controls that affect each options operation.
7.	Xmit/Recv Elements	Use the Visual Channel Utility on the loop connect to verify that all system xmit/recv channels are functional.
8.	Operator Touch Panel test	Perform the Operator Touch Panel Test Procedure.
9.	LCD	Verify basic LCD display functions. Refer to Chapter 2 of the User Manual.
10.	Software Menu check	Verify Software Menu display functions. Refer to Chapter 2 of the User Manual.
11.	Peripherals	See: 'Peripheral Checks' on *page 4-25*.
12.	Measurements	In measurement mode, make distance measurement, get result in result window. Verify the distance by graduated rule. Distance Accuracy should be within ±5%. (Name result from result window Result A, result from graduated rule Result B; Distance Accuracy = (Result B-Result A)/Result A)

Peripheral/option checks

If any peripherals or options are not part of the system configuration, the check can be omitted.

See ‘Functional checks’ on *page 4-8 for more information.*

Mains cable inspection

Table 10-7: Mains Cable Inspection, As Appropriate

Step	Item	Description
1.	Unplug Cord	Disconnect the mains cable from the wall and Ultrasound system.
2.	Inspect	Inspect it and its connectors for damage of any kinds.
3.	Verify	Verify that the LINE, NEUTRAL and GROUND wires are properly attached to the terminals, and that no strands may cause a short circuit.

Cleaning

Table 10-8: General Cleaning

Step	Item	Description
1.	Console	Remove the battery. Use a fluid detergent in warm water on a soft, damp cloth to carefully wipe the entire system. Be careful not to get the cloth too wet so that moisture does not enter the console.
2.	Probe Holder	Clean probe holders. (they may need to be soaked to remove excess gel).
3.	LCD	Use a soft, non-abrasive folder cloth or use the clearners listed in Chapter 6 of User Manual. Gently wipe the LCD face. DO NOT use a glass cleaner that has a hydrocarbon base (such as Benzene, Methy Alcohol or Methy Ethyl Ketone) on LCD with the filter (anti-glare shield).

Physical inspection

NOTE: These features may not be present on all Ultrasound systems.

Table 10-9: Physical checks

Step	Item	Description
1.	Labeling	Verify that all Ultrasound system labeling is present and in readable condition.
2.	Scratches & Dents	Inspect the exterior for dents, scratches or cracks. .
3.	Input Power	Refer to: 'Mains cable inspection' on *page 10-13*.
4.	Cables & Connectors	Check all internal cable harnesses and connectors for wear and secure connector seating. Pay special attention to footswitch assembly and probe strain or bend reliefs.
5.	Shielding & Covers	Check to ensure that all EMI shielding, internal covers, air flow panels and screws are in place. Missing covers and hardware could cause EMI/RFI problems while scanning.
6.	Control Panel	Inspect control panel. Note any damaged or missing items.
7.	Control Panel Lighting	Check for proper operation of all operator panel light.
8.	External I/O	Check all connectors for damage.
9.	Power and System Status Indicators	Check for proper operation of all Power and System Status Indicators.
10.	Battery	Where applicable, check that the battery is not damaged, does not leak, does not emit an odor, and is not deformed or discolored. Observe all warnings and cautions for battery handling, recharging, storing, and/or disposal, as listed in 'Battery Safety' on *page 1-21*.

Optional Diagnostic Checks

Optionally you can access the diagnostic software as described in Chapter 7. View the error logs and run desired diagnostics.

View the Log

1. Review the system error log for any problems.
2. Check the temperature log to see if there are any trends that could cause problems in the future.

Probe maintenance

Probe related checks

Table 10-10: System preliminary checks

Step	Item	Description
1.	Probe Holder	Clean probe holders. (they may need to be soaked to remove excess gel).
2.	Probes	Thoroughly check the Ultrasound system probe connectors and remove dust from inside the connector sockets if necessary. Visually check for bent, damaged or missing pins. Verify that the Ultrasound system properly recognizes all probes.

Basic probe care

The Ultrasound system user manuals and various probe handling cards provide a complete description of probe care, maintenance, cleaning and disinfection. Ensure that you are completely familiar with the proper care of GE probes.

Ultrasound probes can be easily damaged by improper handling. See the User Manual and probe care cards for more details. Failure to follow these precautions can result in serious injury and equipment damage. Failure to properly handle or maintain a probe may also void its warranty.

Any evidence of wear indicates the probe cannot be used.

Do a visual check of the probe pins and Ultrasound system sockets before plugging in a probe.

The Interoperative probes often have special considerations and individual probe user manuals. For Interoperative probes also refer to their separate user manuals.

Basic probe cleaning

Refer to the User's Manual for details on probe cleaning.

w WARNING

To help protect yourself from blood borne diseases, wear approved disposable gloves. These are made of nitrile derived from vegetable starch to prevent allergic latex reactions.

c CAUTION

Failure to follow the prescribed cleaning or disinfection procedures will void the probe's warranty.

DO NOT soak or wipe the lens with any product not listed in the User Manual. Doing so could result in irreparable damage to the probe.

Follow care instructions that came with the probe.

c CAUTION

Disinfect a defective probe before you return it. Be sure to tag the probe as being disinfected.

Battery Performance Maintenance

Battery replacement every three years is recommended.

It is recommended to do battery performance maintenance one time per year.

Please follow the chart below to carry out battery performance maintenance.

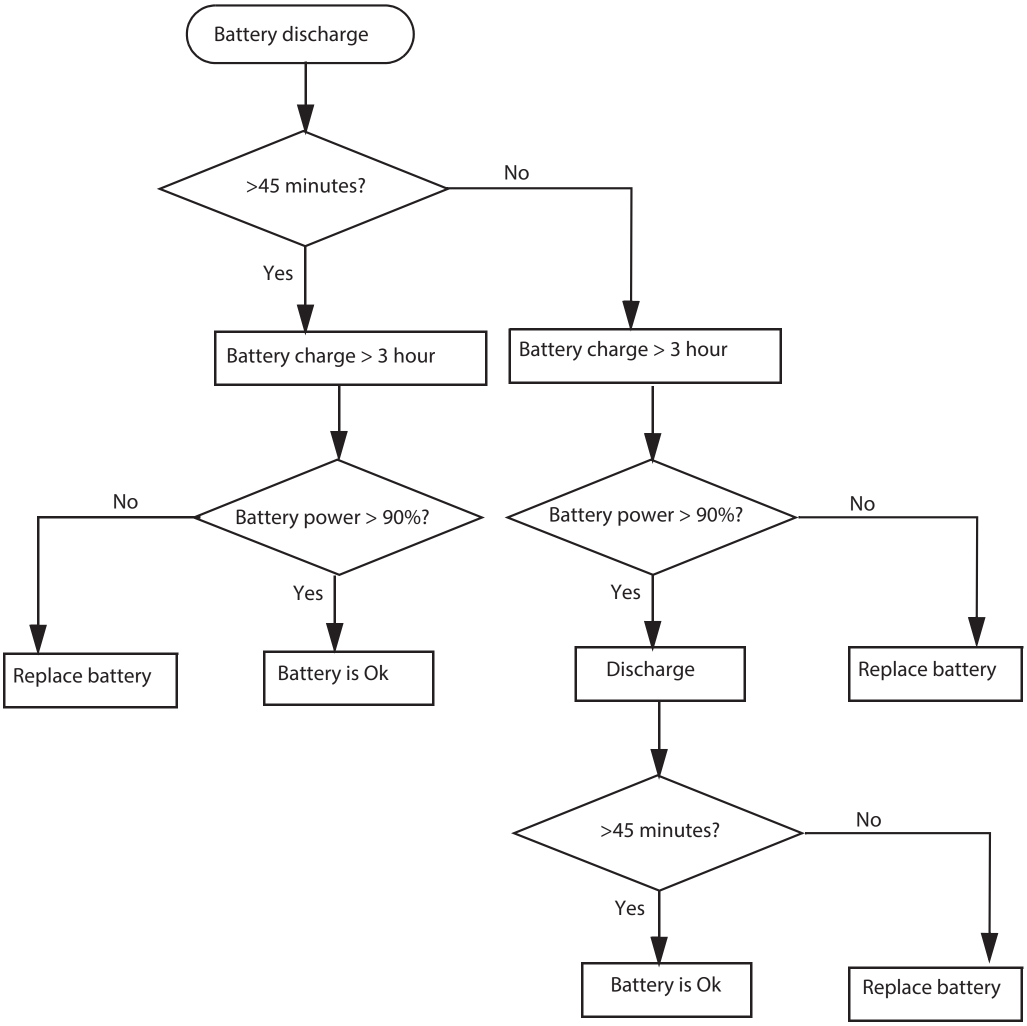

Battery discharge
>45 minutes?
No
Yes
Battery charge > 3 hour
Battery charge > 3 hour
No
Battery power > 90%?
Battery power > 90%?
No
Yes
Yes
Replace battery
Battery is Ok
Discharge
Replace battery
>45 minutes?
No
Yes
Battery is Ok
Replace battery

Figure 10-1. Flow chart of Battery Performance Maintenance

NOTE: *Disconnect all probes when discharge battery.*

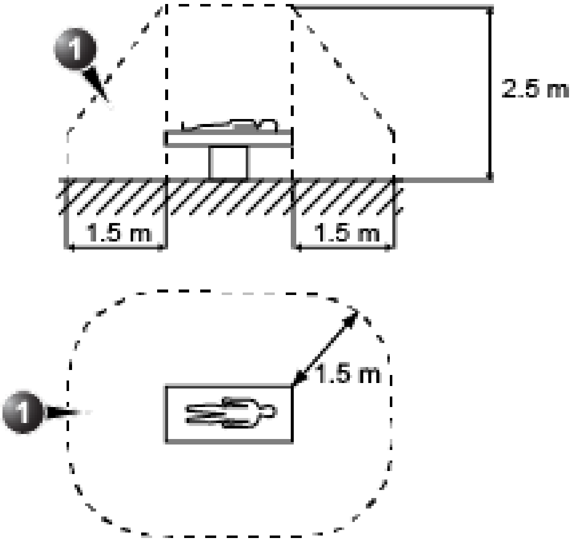
NOTE: *Discharge the battery to let the system automatically shut down.*

Electrical safety tests

Overview

NOTE: *For all instructions in the "Electrical safety tests" section in case of using a UPS (uninterruptible power supply) the terms outlet, wall outlet, AC wall outlet and power outlet refer to the AC power outlet of the UPS. In case of further available AC (or DC) power outlets at the same used UPS, these must remain unused i.e. not connected to any other devices.*

CAUTION Please observe that some Uninterruptible Power Supplies (UPS) may not be medical devices! If the UPS is no medical device, it has to be located outside of the patient environment (according to IEC 60601-1 / UL 60601-1).



1. Patient environment

Overview (continued)

The following topics and measurements are covered in this subsection:

- 'Safety test overview' on *page 10-20*
- 'Leakage current limits' on *page 10-22*
- 'Outlet test - wiring arrangement' on *page 10-24*
- 'Grounding continuity' on *page 10-25*
- 'Chassis leakage current test' on *page 10-26*
- 'Probe leakage current test' on *page 10-29*

Safety test overview

The electrical safety tests in this section are based on and conform to IEC 60601-1 Medical Equipment Safety Standards. They are intended for the electrical safety evaluation of cord-connected, electrically operated, patient care equipment. If additional information is needed, refer to the IEC 60601-1 documents

WARNING

THE USER MUST ENSURE THAT THE SAFETY INSPECTIONS ARE PERFORMED WHENEVER DAMAGE IS SUSPECTED AND AT LEAST EVERY 6 MONTHS ACCORDING TO THE REQUIREMENTS OF THE PATIENT SAFETY STANDARD IEC-EN 60601-1. DO NOT USE THE ULTRASOUND SYSTEM OR INDIVIDUAL PROBES WHICH FAIL ANY PORTION OF THE SAFETY TEST.

DANGER

TO MINIMIZE RISK OF ELECTRICAL SHOCK, ONLY TRAINED PERSONS ARE ALLOWED TO PERFORM THE ELECTRICAL SAFETY INSPECTIONS AND TESTS.

DANGER

TO AVOID ELECTRICAL SHOCK, THE ULTRASOUND SYSTEM UNDER TEST **MUST NOT** BE CONNECTED TO OTHER ELECTRICAL EQUIPMENT. REMOVE ALL INTERCONNECTING CABLES AND WIRES. THE ULTRASOUND SYSTEM UNDER TEST MUST NOT BE CONTACTED BY USERS OR PATIENTS WHILE PERFORMING THESE TESTS.

CAUTION

Possible risk of infection. Do not handle soiled or contaminated probes and other components that have been in patient contact. Follow appropriate cleaning and disinfecting procedures before handling the equipment.

Safety test overview (continued)

Prior to initiating any electrical test, the Ultrasound system must be visually inspected. Perform the following visual checks:

- Check for missing or loose enclosure covers that could allow access to internal live parts.
- Examine the mains cord, mains plug and appliance inlet for damaged insulation and adequacy of strain relief and cable clamps.
- Locate and examine all associated transducers. Inspect the cables and strain relief at each end. Inspect the transducer enclosure and lens for cracks, holes and similar defects.

Test the system, peripherals and probes for leakage current. Excessive leakage current can cause injury or death in sensitive patients. High leakage current can also indicate degradation of insulation and a potential for electrical failure. Do not use probes or equipment having excessive leakage current.

To minimize the risk that a probe may shock someone the customer should:

- Not use a probe that is cracked or damaged in any way.
- Check probe leakage current:
  - Based on your facilities QA program for surface probes.
  - Based on your facilities QA program for endocavitary probes.
  - whenever probe damage is suspected.

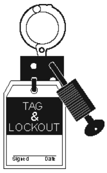
Leakage current limits

WARNING

Energy Control and Power Lockout for Venue 50.

When servicing parts of the Ultrasound system where there is exposure to voltage greater than 30 volts:

1. Follow LOCK OUT/TAG OUT procedures.
2. Turn off the breaker.
3. Unplug the Ultrasound system.
4. Maintain control of the Ultrasound system power plug.
5. Wait for at least 30 seconds for capacitors to discharge as there are no test points to verify isolation.
6. Remove/disconnect the battery, if present.



Ultrasound System components may be energized.

CAUTION

Compare all safety-test results with safety-test results of previously performed safety tests (e.g. last year etc). In case of unexplainable abrupt changes of safety-test results consult experienced authorized service personnel or GE for further analysis.

The following limits are summarized for IEC 60601-1 Medical Equipment Safety Standards. These limits are GE standards and in some cases are lower than the above standards listed.

Table 10-11: Chassis Leakage Current Limits - Accessible Metal Surface

Country	Normal Condition	Open Ground	Reverse Polarity	Open Neutral
All (Except USA & Canada)	0.1 mA	0.5 mA	0.5 mA	0.5 mA
USA & Canada	0.1 mA	0.3 mA	0.3 mA	0.3 mA

Table 10-12: Type BF Applied Part Leakage Current Limits - Probes Surface

Country	Normal Condition	Open Ground	Reverse Polarity	Open Neutral	*Mains Applied
All	0.1 mA	0.5 mA	0.5 mA	0.5 mA	5.0 mA

Leakage current limits (continued)

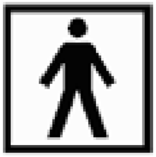
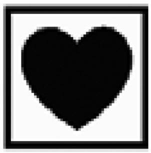
Table 10-13: Type CF Applied Part Leakage Current Limits - ECG Connections

Country	Normal Condition	Open Ground	Reverse Polarity	Open Neutral	*Mains Applied
All	0.01 mA	0.05 mA	0.05 mA	0.05 mA	0.05 mA

NOTE: **Mains Applied refers to the sink leakage test where mains (supply) voltage is applied to the part to determine the amount of current that will pass (or sink) to ground if a patient is in contact with mains voltage.*

The following tests are performed at the factory and should be performed at the site. These tests are: chassis leakage current, and probe leakage current. All measurements are made with an electrical safety analyzer which should be calibrated and compliant with AAMI/ESI 1993 or IEC 60601 or AS/NZS 3551.

Table 10-14: Equipment Type and Test Definitions

Applied Parts (AP)	Parts or accessories that contact the patient to perform their function. For ultrasound equipment, this includes transducers and ECG leads.	
Type BF	Body Floating or non-conductive ultrasound probes which are marked with the 'man in box' BF symbol. this includes all transducers.	
Type CF	Cardiac Floating or non-conductive intraoperative probes for direct cardiac contact and isolated ECG connections so marked with the 'heart in box' CF symbol.	
Sink Leakage	The current resulting from the application of mains voltage to the applied part. This test is required test for Type CF applied parts.	

Outlet test - wiring arrangement

Test all outlets in the area for proper grounding and wiring arrangement by plugging in the neon outlet tester and noting the combination of lights that are illuminated. Any problems found should be reported to the hospital immediately and the receptacle should not be used.

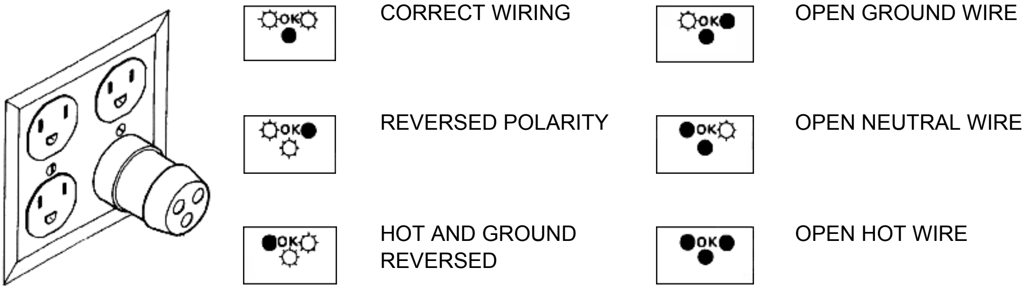

OK
CORRECT WIRING
OK
OPEN GROUND WIRE
OK
REVERSED POLARITY
OK
OPEN NEUTRAL WIRE
OK
HOT AND GROUND REVERSED
OK
OPEN HOT WIRE

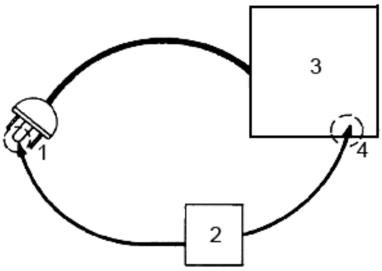
Figure 10-2. Typical alternate outlet tester

NOTE: *No outlet tester can detect the condition where the Neutral (grounded supply) conductor and the Grounding (protective earth) conductor are reversed. If later tests indicate high leakage currents, this should be suspected as a possible cause and the outlet wiring should be visually inspected.*

Grounding continuity

DANGER ELECTRIC SHOCK HAZARD. THE PATIENT MUST NOT BE CONTACTED TO THE EQUIPMENT DURING THIS TEST.

Measure the resistance from the third pin of the attachment plug to the exposed metal parts of the case. The ground wire resistance should be less than **0.1** ohms. Reference the procedure in the IEC60601-1.



1. GROUND PIN
2. OHMMETER
3. DOCKING CART
4. ACCESSIBLE METAL PART:
   - I/O Board
   - Probe cable hook

Figure 10-3. Ground continuity test

Chassis leakage current test

DANGER

ELECTRIC SHOCK HAZARD. WHEN THE METER'S GROUND SWITCH IS OPEN, DON'T TOUCH THE ULTRASOUND SYSTEM!.

CAUTION

Equipment damage possibility. Never switch the Polarity and the status of Neutral when the Ultrasound system is powered ON. Be sure to turn the Ultrasound system power OFF before switching them using the POLARITY switch and/or the NEUTRAL switch. Otherwise, the Ultrasound system may be damaged.

Definition

This test measures the current that would flow in a grounded person who touched accessible metal parts of the bedside station if the ground wire should break. The test verifies the isolation of the power line from the chassis. The meter is connected from accessible metal parts of the case to ground. Measurements should be made with the unit On and Off, with the power line polarity Normal and Reversed. Record the highest reading.

CAUTION

Electric Shock Hazard. When the meter's ground switch is OPEN, don't touch the unit!

CAUTION

Equipment damage possibility. Never switch the Polarity and the status of Neutral when the unit is powered ON. Be sure to turn the unit power OFF before switching them using the POLARITY switch and/or the NEUTRAL switch. Otherwise, the unit may be damaged.

Generic procedure

The test verifies the isolation of the power line from the chassis. The testing meter is connected from accessible metal parts of the case to ground. Measurements should be made with the unit ON and OFF, with the power line polarity Normal and Reversed. Record the highest reading of current.

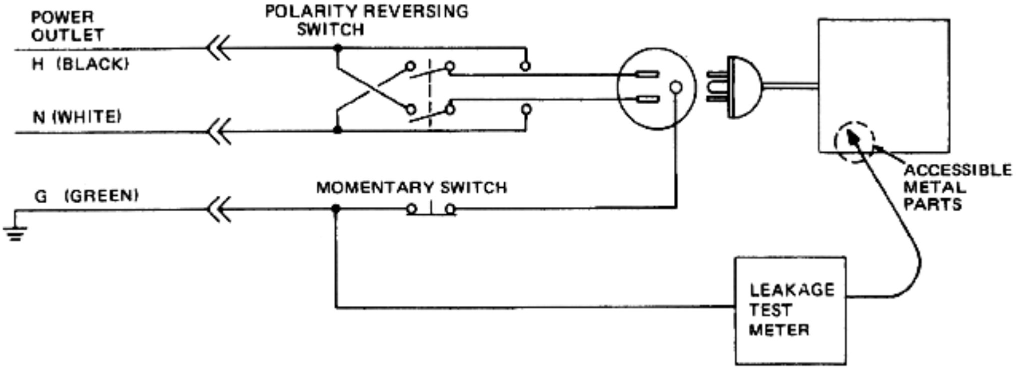

POWER OUTLET
H (BLACK)
N (WHITE)
G (GREEN)
POLARITY REVERSING SWITCH
MOMENTARY SWITCH
ACCESSIBLE METAL PARTS
LEAKAGE TEST METER

Figure 10-4. Set Up for Chassis Source Leakage Current, IEC 601-1 Clause 19 - Continuos Leakage Currents and Patient, Auxiliary Currents

When using the Microguard or a similar test instrument, its power plug may be inserted into the wall outlet and the equipment under test is plugged into the receptacle on the panel of the meter. This places the meter in the grounding conductor and the current flowing from the case to ground will be indicated in any of the current ranges. The maximum allowable limit for chassis source leakage is shown in Table 10-11 *on page 10-22*.

Data Sheet for enclosure Source Leakage Current

The test passes when all readings measure less than the value shown in Table 10-11 *on page 10-22*. Record all data on the PM Inspection Certificate.

Table 10-15: Typical Data Sheet for enclosure Source Leakage Current

Unit Power	Tester Polarity Switch	Tester Neutral or Ground Switch	Test 1 Speaker Cover	Test 2 Real Panel Metal Parts	Optional Test 3	Optional Test 4
Enter Name of tested peripheral here:						
ON	NORM	OPEN				
ON	NORM	CLOSED				
ON	REV	OPEN				
ON	REV	CLOSED				
OFF	NORM	OPEN				
OFF	NORM	CLOSED				
OFF	REV	OPEN				
OFF	REV	CLOSED				

Probe leakage current test

DANGER

DO NOT USE THE PROBE IF THE INSULATING MATERIAL HAS BEEN PUNCTURED OR OTHERWISE COMPROMISED.

INTEGRITY OF THE INSULATION MATERIAL AND PATIENT SAFETY CAN BE VERIFIED BY SAFETY TESTING ACCORDING TO IEC60601-1.

CAUTION

Equipment damage possibility. Never switch the Polarity and the status of Neutral when the Ultrasound system is powered ON. Be sure to turn the Ultrasound system power OFF before switching them using the POLARITY switch and/or the NEUTRAL switch. Otherwise, the Ultrasound system may be damaged.

Definition

This test measures the current that would flow to ground from any of the probes through a patient who is being scanned and becomes grounded by touching some other grounded surface.

NOTE: *Some leakage current is expected on each probe, depending on its design. Small variations in probe leakage currents are normal from probe to probe. Other variations will result from differences in line voltage and test lead placement. It is abnormal if no leakage current is measured. If no leakage current is detected, check the configuration of the test equipment.*

Tools

For needed tools, see: 'Tools required' on *page 10-7*.

Generic procedure on probe leakage current

Measurements should be made with the ground open and closed, with power line polarity normal and reversed, and with the unit Off and On. For each combination, the probe must be active to find the worst case condition.

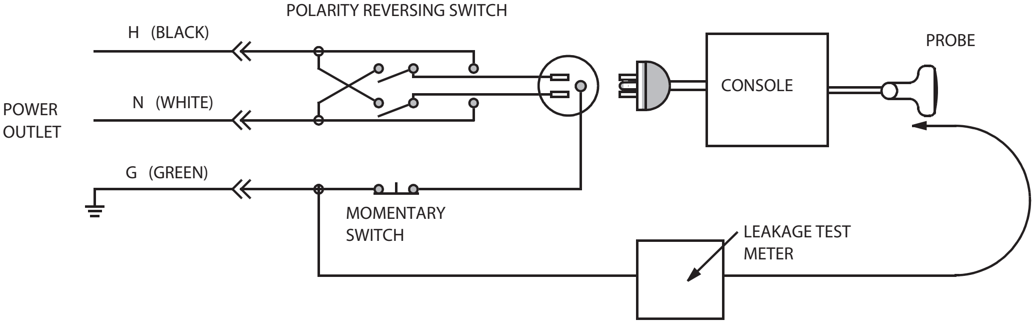


Figure 10-5. Set up for probe leakage current

NOTE: *Each probe will have some amount of leakage current, dependent on its design. Small variations in probe leakage currents are normal from probe to probe. Other variations will result from differences in line voltage and test lead placement.*

DANGER TO AVOID PROBE DAMAGE AND POSSIBLE ELECTRIC SHOCK, DO NOT IMMERSE PROBES INTO ANY LIQUID BEYOND THE LEVEL INDICATED IN THE PROBE USERS MANUAL. **DO NOT TOUCH THE PROBE, CONDUCTIVE LIQUID OR ANY PART OF THE UNIT UNDER TEST WHILE DOING THE TEST**.

Meter Procedure Using Probe Adapter

Follow the Safety Analyzer tool instruction to test each transducer for leakage current.

The electrical Safety Analyzer tool should be calibrated and compliant with AAMI/ESI 1993 or IEC 60601 or AS/NZS 3551.

No Meter Procedure Using Probe Adapter

Follow the Safety Analyzer tool instruction to test each transducer for leakage current.

The electrical Safety Analyzer tool should be calibrated and compliant with AAMI/ESI 1993 or IEC 60601 or AS/NZS 3551.

Data Sheet for Transducer Source Leakage Current

The test passes when all readings measure less than the values shown in Table 10-12 *on page 10-22*. Record all data on the PM Inspection Certificate.

Table 10-16: Typical Data Sheet For Transducer Source Leakage Current

Transducer Tested:			
Unit Power	**Tester Power Polarity Switch**	**Tester GROUND or NUETRAL Switch**	**Measurement**
ON	NORM	OPEN	
ON	NORM	CLOSED	
ON	REV	OPEN	
ON	REV	CLOSED	
OFF	NORM	OPEN	
OFF	NORM	CLOSED	
OFF	REV	OPEN	
OFF	REV	CLOSED	

When there's too much leakage current …

AC/DC Fails

Where applicable, check the AC/DC adapter and its cable. Replace a new one if any portion is defective.

Enclosure Fails

Check for any damage to the enclosure. Replace any defective part.

Inspect wiring for bad crimps, poor connections, or damage.

Test the wall outlet; verify it is grounded and is free of other wiring abnormalities. Notify the user or owner to correct any deviations. As a work around, check the other outlets to see if they could be used instead.

NOTE: *No outlet tester can detect the condition where the white neutral wire and the green grounding wire are reversed. If later tests indicate high leakage currents, this should be suspected as a possible cause and the outlet wiring should be visually inspected.*

Probe Fails

Change another probe to confirm if the fail is caused by console.

NOTE: *Each probe will have some amount of leakage, dependent on its design. Small variations in probe leakage currents are normal from probe to probe. Other variations will result from differences in line voltage and test lead placement. The maximum allowable leakage current for body surface contact probe differs from inter-cavity probe. Be sure to enter the correct probe type in the appropriate space on the check list.*

If excessive leakage current is slot dependent, inspect the system connector for bent pins, poor connections, and ground continuity.

If the problem remains with the probe, replace the probe.

Peripheral Fails

Inspect wiring for bad crimps, poor connections, or damage.

Still Fails

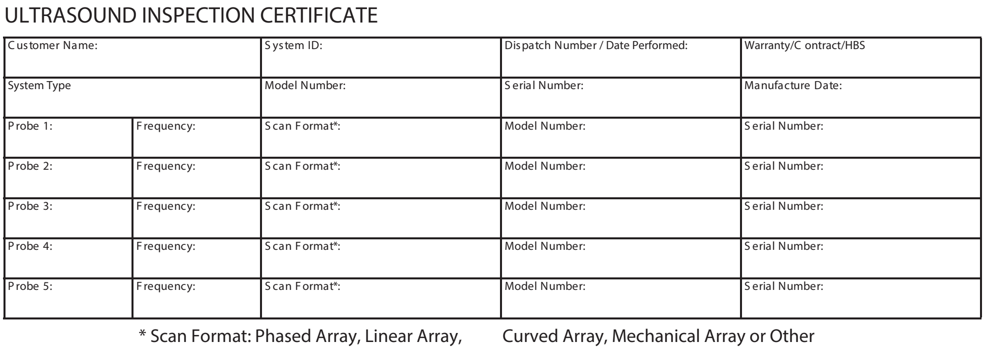
If all else fails, begin isolation by removing the probes, external peripherals, then the on board ones, one at a time while monitoring the leakage current measurement.

New Unit

If the leakage current measurement tests fail on a new Ultrasound system and if situation can not be corrected, submit a Safety Failure Report to document the Ultrasound system problem. Remove Ultrasound system from operation.

Inspection Paperwork

Ultrasound Inspection Forms



ULTRASOUND INSPECTION CERTIFICATE

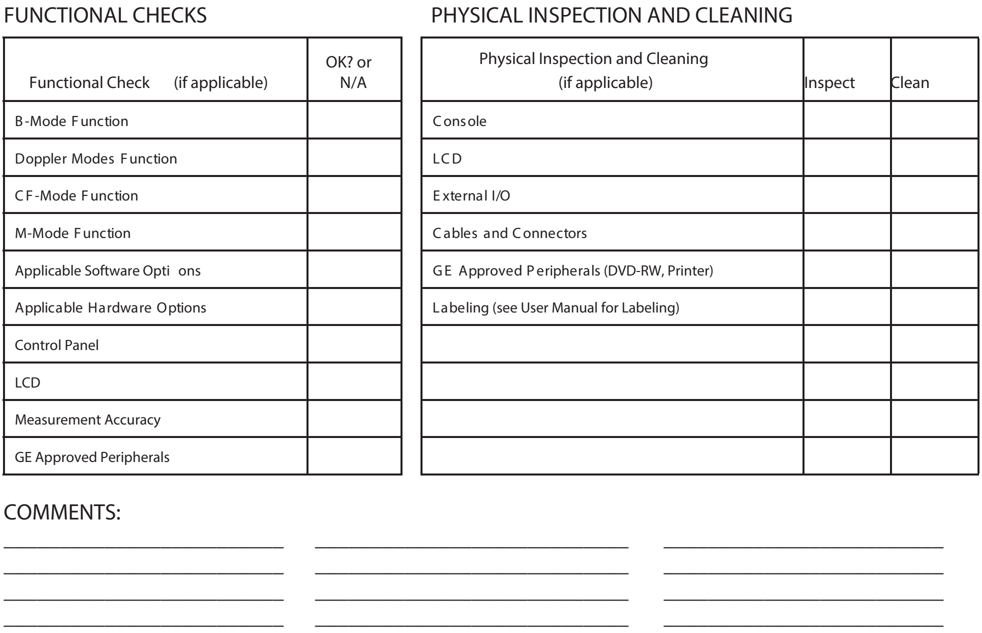
Customer Name:		System ID:	Dispatch Number / Date Performed:	Warranty/Contract/HBS
System Type		Model Number:	Serial Number:	Manufacture Date:
Probe 1:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 2:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 3:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 4:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 5:	Frequency:	Scan Format*:	Model Number:	Serial Number:

* Scan Format: Phased Array, Linear Array, Curved Array, Mechanical Array or Other

Figure 10-6. Ultrasound Inspection Certificate

* Scan Format: Phased Array, Linear Array, Curved Array, Mechanical Array or Other

Ultrasound Inspection Forms (continued)



FUNCTIONAL CHECKS

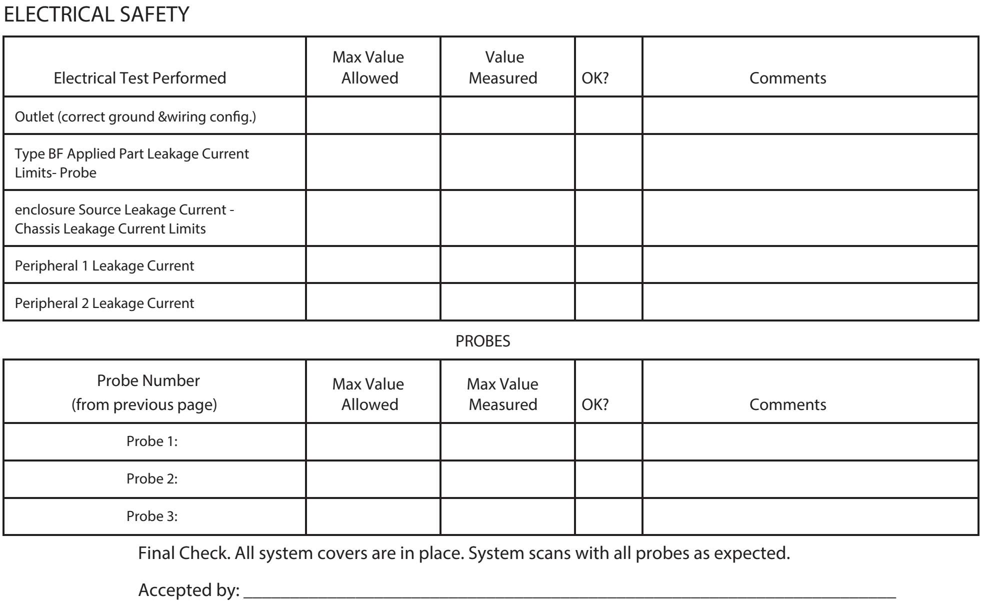
Functional Check (if applicable)	OK? or N/A
B-Mode Function	
Doppler Modes Function	
CF-Mode Function	
M-Mode Function	
Applicable Software Options	
Applicable Hardware Options	
Control Panel	
LCD	
Measurement Accuracy	
GE Approved Peripherals	

PHYSICAL INSPECTION AND CLEANING

Physical Inspection and Cleaning (if applicable)	Inspect	Clean
Console		
LCD		
External I/O		
Cables and Connectors		
GE Approved Peripherals (DVD-RW, Printer)		
Labeling (see User Manual for Labeling)		

COMMENTS:

Figure 10-7. Functional Checks



ELECTRICAL SAFETY

Electrical Test Performed	Max Value Allowed	Value Measured	OK?	Comments
Outlet (correct ground &wiring config.)				
Type BF Applied Part Leakage Current Limits- Probe				
enclosure Source Leakage Current - Chassis Leakage Current Limits				
Peripheral 1 Leakage Current				
Peripheral 2 Leakage Current				

PROBES

Probe Number (from previous page)	Max Value Allowed	Max Value Measured	OK?	Comments
Probe 1:				
Probe 2:				
Probe 3:				

Final Check. All system covers are in place. System scans with all probes as expected.

Accepted by: ______________________________

Figure 10-8. Electrical Safety

Index

A

abbrevations, *9-3*
acclimate time, *2-3*
approved
    internal peripherals, *3-31*
approved internal peripherals, *3-31*
average setup time, *3-3*

B

before installation (site preparations), *2-1*
Boot Up, *3-28*

C

cable inspection
    mains cable inspection, *10-13*
care and maintenance, *10-1*
    warnings, *10-3*
CE compliance, *1-26*
change history, *i-1*
chapter 1
    introduction, *1-1*
chassis leakage current test, *10-26*
cold or hot
    if the unit is very cold or hot, *2-3*
compatibility
    hardware/software, *9-4*
completing the setup, *3-23*
compliance, *1-26*
configuration, *3-29*
Connect a probe, *3-25*
Connecting probes, *3-25*
console environmental requirements, *2-3*
console requirements, *2-3*
contact information, *1-28*
contents in this manual, *1-3*
Contents in this section, *3-23*
conventions used in book, *1-6*
copyrights, *i-14*
customer assistance, *1-28*
    phone numbers, *1-29*
customer order
    verification, *3-22*

D

damage in transport, *i-11*
dangerous procedure warnings, *1-23*
data network setup requirements, *2-16*
desirable features, *2-13*
DICOM network function, *2-16*
DICOM setup requirements, *2-17*
disposal
    used media, *8-23*
    used parts, *8-23*
Distance, *4-20*

E

electrical requirements, *2-6*
    EMI limitations
        EMI limitations, *2-8*
    general requirements, *2-6*
    power stability requirements
        power stability requirements, *2-7*
    power transients
        power transients, *2-7*
    site circuit breaker
        site circuit breaker, *2-7*
    site power outlets
        site power outlets, *2-7*
    specific requirements for the unit, *2-6*
    unit power plug
        unit power plug, *2-7*
    voltage drop-out
        voltage drop-out, *2-7*
electrical safety, *1-20*
electrical safety tests, *10-18*
electrical specification, *3-30*
electromagnetic interference
    abatement, *2-9*
    prevention, *2-9*
electrostatic discharge prevention, *1-27*
Ellipse, *4-20*
EMC, *1-26*
    compliance, *1-26*
    what is EMC?, *1-26*
EMI, *1-26*
    abatement, *2-9*
    prevention, *2-9*
    protection, *3-22*
environmental dangers, *2-19*

environmental specifications for the unit, *2-4*
errors, *i-12*
ESD, *1-26*
ESD prevention, *1-27*

F

facility needs, *2-11*
    desirable features, *2-13*
    DICOM network function, *2-16*
    DICOM setup requirements, *2-17*
    minimal floor plan suggestion, *2-14*
    network setup requirements, *2-16*
    purchaser responsibilities, *2-12*
    recommended floor plan suggestion, *2-14*
    required facility needs, *2-13*
    suggested floor plan
        scanner and EchoPAC in same room, *2-14*, *2-15*
floor plan suggestion
    mininal, *2-14*
    recommended, *2-14*
    scanner and EchoPAC in same room, *2-14*, *2-15*
functional checks, *10-12*
    mains cable inspection, *10-13*
    system checks, *10-12*

G

GE Healthcare leakage current limits, *10-22*
general console requirements, *2-3*
generic procedure on probe leakage current, *10-30*
grounding continuity, *10-25*

H

hardware/software compatibility, *9-4*
hardware-software
    compatibility, *5-3*
hot or cold
    if the unit is very cold or hot, *2-3*
how often should maintenance tasks be performed?, *10-5*
human safety, *1-16*

I

icons, *1-6*
icons indicating a special procedure to be used, *1-9*
if the unit is very cold or hot, *2-3*
important precautions, *i-2*
installation
    see "system setup", *3-1*
installation warnings
    see "setup warnings", *3-3*
introduction (chapter 1), *1-1*

L

legal notes, *i-14*
lighting, *2-5*
list of abbrevations, *9-3*
loading software, *8-13*
lockout/tagout (LOTO) requirements, *1-24*
LOTO
    lockout/tagout requirements, *1-24*

M

mains cable inspection, *10-13*
maintenance
    physical inspection, *10-14*
    preliminary checks, *10-11*
    system maintenance, *10-11*
maintenance task schedule, *10-5*
manufacturer, *1-29*
mechanical safety, *1-18*
model designations, *1-6*
models covered by this manual, *1-5*
Monitor Display, *4-10*

N

network setup requirements, *2-16*
No Probe, *3-43*

O

omission and errors, *i-12*
operational and storage temperature for probes, *2-10*

P

paperwork
    after setup, *3-56*
periodic maintenance inspection (PM), PM (periodic maintenance inspection), *10-2*
phone numbers
    customer assistance, *1-29*
physical dimensions, *3-29*
physical inspection
    at arrivel, *3-22*
Power On, *3-28*
precautions
    certified electrical contractor statement, *i-11*
    damage in transport, *i-11*
    important precautions, *i-2*
    service safety considerations, *i-13*
    translation policy, *i-2*
prepeare for setup, *3-22*
probe cleaning, *10-16*
probe leakage current test, *10-29*
probe maintenance, *10-15*
    basic probe care, *10-15*
    basic probe cleaning, *10-16*
    probe related checks, *10-15*

probe related checks, *10-15*

probes environmental requirements, *2-10*
    operational and storage temperature for probes, *2-10*

product icons, *1-10*

product locator installation card, *3-56*

products covered by this manual, *1-5*

Purchaser responsibilities, *2-12*

Purpose of this section, *3-23*

R

receiving and unpacking, *3-6*

receiving the product, *3-7*

required facility needs, *2-13*

requirements, *2-3*

requirements verification, *3-29*

returning/shipping probes and repair parts, *1-25*

revision history, *i-1*

S

safety
    human, *1-16*

safety precaution messages, *1-7*

safety test overview, *10-20*

service safety considerations, *i-13*

Set, *4-20*

setup
    completion, *3-23*
    preparations, *3-22*
    reminders, *3-3*

setup time, *3-3*

setup warnings, *3-3*

shipping/returning probes and repair parts, *1-25*

site preparations, *2-1*

software loading, *8-13*

software option
    configuration, *3-55*

Software version check-out, *3-55*

software/hardware compatibility, *9-4*

software-hardware
    compatibility, *5-3*

specifications, *3-29*
    electrical specifications, *3-30*
    physical dimensions, *3-29*

standard GE tool kit, *10-7*

standard hazard icons, *1-8*

statement
    certified electrical contractor statement, *i-11*

system
    specifications, *3-29*

system checks, *10-12*

system maintenance, *10-11*
    physical inspection, *10-14*
    preliminary checks, *10-11*

system manufacturer, *1-29*

system requirements verification, *3-29*

system setup, *3-1*

T

tools required, *10-7*
    special tools, supplies and equipment, *10-10*
    standard GE tool kit, *10-7*

trademarks, *i-14*

translation policy, *i-2*

transport
    damage, *i-11*

typical users of the service manual, *1-4*

U

unpacking, *3-6*

unpacking instructions, *3-9*

used media
    disposal, *8-23*

used parts
    disposal, *8-23*

V

verification
    system requirements, *3-29*

verify customer order, *3-22*

voltage settings, *3-30*

W

warnings, *10-3*
    dangerous procedures, *1-23*

what is EMC?, *1-26*

when there's too much leakage current, *10-32*
    chassis fails, *10-32*
    new unit, *10-33*
    peripheral fails, *10-33*
    probe fails, *10-33*
    still fails, *10-33*